Industrial Finishing

Reg. U. S. Pat. Off.

An Independent Publication Devoted to the Finishing of Industrial Products

Vol. VII, No. 12 **OCTOBER, 1931** **$2.00 a Year**

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Published by PRACTICAL PUBLICATIONS, INC., 802 Wulsin Bldg., Indianapolis, Ind.

Eastern Representative—C. A. Larson
254 West 31st St., New York
Phone, Penna. 9049

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From the Editor's Desk

WE READ SOMEWHERE that "values do not exist in materials; they exist in the minds of the people who are going to buy." The more you think about this statement, the more you are inclined to agree with it. After all, the value of your product and ours must be built up in the minds of prospective buyers and maintained in the minds of customers.

When your customers and a reasonable portion of prospects feel that your product is a good buy for the money—and a desirable buy—you have established an excellent reputation, and you are in line for some profitable business if you manage wisely. But what is there except continuous advertising to build up and maintain these values in other people's minds?

PRICES AND costs are receiving much attention from leaders in practically all industries; always essential, cost figures and price quotations are tremendously important today. Elements that make up costs are influenced by a wide variation of new prices, and unless management is extremely alert to profit by the possibilities of the newer materials and methods, serious business losses are sure to follow. Some interesting suggestions and facts about how to cut finishing costs are revealed in Mr. Scribner's article beginning on page 7 of this issue.

THE TERM "spray finishing" is no longer restricted to what is done by a man with a spray gun in hand. Several types of automatic machines have been developed wherein parts to be spray finished are mechanically presented to and removed from one or more spray guns not held by human hands. The spray may be continuous or regularly intermittent, and the spray guns may be stationary or arranged to move automatically.

Far-reaching possibilities unfold when one thinks for a few moments about what might be done with mechanical conveying and automatic spray apparatus—with or without accelerated drying. Decorative features such as striping, two-toning, highlighting, stenciling, etc., are not impossible. Hasn't Brisbane reminded us repeatedly that what the human mind can imagine it can do—eventually?

SALES DURING August and September showed a marked increase in the demand for seating for schools, theatres, and churches; also for automobile radio sets, home talking-picture machines and television outfits—according to a recent issue of *Domestic Commerce*, published by the U. S. Department of Commerce.

W. H. Rohr

Managing Editor

DeVilbiss

HEADQUARTERS FOR SPRAY-FINISHING EQUIPMENT FOR THE FINISHING ROOM

Mass production and faster schedules have created a constantly increasing demand for automatic equipment in spray-finishing operations and DeVilbiss engineers are constantly designing new and special equipment for this purpose. This special equipment has reduced costs to such an amazing degree that installations pay for themselves in a remarkably short length of time.

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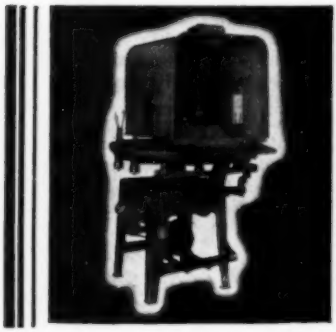


How to Cut Finishing Costs

By
C. F. SCRIBNER*, M.E.

That woodworking plants in general, and the finishing departments in particular, can benefit by the cost reduction methods which are finding increasing application in industry, is the purpose of this article to prove

"Here is a short article about 'Cost Reduction Methods in the Finishing Department,' with which I am sending a chart showing the results which were actually accomplished by means of my service. I submit this for consideration and publication in INDUSTRIAL FINISHING."

C. F. Scribner

MANAGERS who have studied the trend of betterment work in industry will concede that the greatest progress has been made in the field of metal-working. This, perhaps, is due to the fact that the originators of the modern management movement had their training in metal-working and it was to these industries that first attention was given.

However, there is a constantly increasing percentage of plants in other industries that are adopting some form of wage-incentive plan for their employes, as shown by the following figures:

Year	Plants	Workers	Incentive
1924	1,000	400,000	44%
1927	1,100	500,000	49%
1928	672	.....	54%

In plants devoted to the manufacture of automotive products it has been found that 65% of the workers are paid in some form of wage-incentive plan. This is 11% greater than the figures for 1928, which were taken solely from metal-working industries.

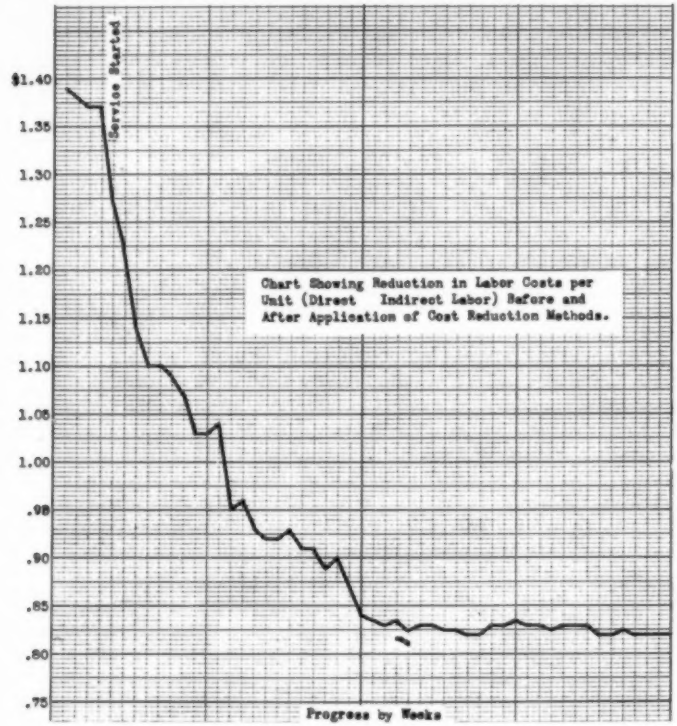
In the first place there are two conditions in the finishing department to which attention must be given on the part of the management before there can be any hope of profitable and permanent accomplishment in this field. These two conditions are:

FIRST: Control of production must be established, including the control of work flowing into the finishing department, the supply of finishing materials in adequate quantity and the right quality, the maintenance of all machines and equipment in first-class condition, and properly trained employes must be at hand to carry on the finishing work.

SECOND: Operation studies must be made and these studies must be analyzed to find the wastes of time and materials which are taking place under present practices. Improved practices, which will eliminate these wastes, must be taught to all employes. Following this, definite time standards for all operations must be established, as the basis for incentive plans which may be put into effect.

The greatest cause for failure of incentive plans and one which is seldom recognized until it is too late and the confidence of employes has been destroyed, is to attempt putting into effect

* President, C. F. Scribner & Co.



Labor costs per unit (both direct and indirect labor) in the finishing department of a kitchen cabinet factory. Across the chart "Progress by Weeks" are 52 divisions—the 52 weeks of a year.

time standards without first making conditions right and taking steps for keeping them right.

If a time standard is set for a given operation, and in setting this standard all time losses and delays are left out of consideration, then it will be futile to suppose that employes are regularly going to reach this standard unless steps are taken to see that these time losses and delays do not occur in the future.

Again, in the operation study and analysis which precedes setting of time standards, there is a fertile field for improving the conditions, so that two or even three times the output will be secured with the same man-effort. Invariably these conditions are beyond the power of the individual workman to control, and they call for definite attention from the management. Lacking this managerial attention, there is little hope for more than temporary success from the new methods.

To show what has been possible of accomplishment where these conditions have been met and where the management was not only willing but eager to do its part in effecting cost reduction, the chart shown in this article represents the "before and after" condition relating to the finishing department in a plant manufacturing kitchen cabinets.

This chart shows that a period of 20 weeks were required before costs were brought down to a stable minimum, but that after this period they remained very constant over the next 6-month period. It also shows that cost reduction is a continuous process; that the movement from present costs to the lower figure is obtained by gradual steps, which indicates the increasing interest of employes in their work and the perfecting of the methods which are put into operation.

Perhaps the biggest point this article makes is that the start must be made and, with the management giving complete active cooperation, there is no question about the ultimate outcome. After all, factory operations are problems that must be treated by research and the application of right principles if their solution is to bring some benefit to the employer, the employe, and the customer.

Paint and Varnish Payroll

A survey of the employment and payroll status in the Paint and Varnish industry of the U.S., compiled by George V. Horgan, General Manager of the National Paint, Oil and Varnish Association, Inc., and the American Paint and Varnish Manufacturers' Association, Inc., at the request of the President's Organization on Unemployment Relief, indicates that on August 1st, the total number of persons employed was approximately 81% of the number employed in 1929. The dollar payroll of August 1st, 1931, was 79% of the 1929 payroll.

In 1929, approximately 99% of the total number of employes were working on full time. Of the total number employed on August 1st of the present year, 69% were on full time, while the remaining employes were working approximately 76% of full time.

The findings are based upon the answers to a questionnaire by 60 representative manufacturers, who were considered as representing a fair average cross section of the industry.

Sixty-six percent of the employers reporting, stated that they do not expect further layoffs, 17% anticipated a 10% reduction, while 17% said their program would depend upon business developments.

Fifty percent of the companies stated that painting, repairing, construction, unusual improvement and maintenance work was in progress in an effort to maintain maximum employment.

Other firms reported reduced working hours or staggered time in order to provide work for all members of their forces.

The other 50% of the companies reported no definite plans to keep their forces at maximum, but in this category were included companies which reported employment and payrolls fairly comparable with 1929.

Sixteen percent reported all workers on full time and payrolls equal to or better than 1929.

An additional 25% of the companies reporting show all workers on full time, but with a payroll and working force reduction of approximately 10%. The reduction in payroll in this class is partially accounted for by vacations without pay and shorter working hours.

DuPont Display

A display of Trim and Trellis Green—an outside paint developed by the DuPont Co.—is being featured in one of the Boardwalk windows of the DuPont Exhibit in Atlantic City. It is in four shades—jade green, light green, dark green and bronze green.

Newark Wire Cloth Co. Appoints Sales Manager

The Newark Wire Cloth Co., Newark, N. J., manufacturer of wire cloth products for all industries, announces the appointment of Mr. F. C. Ryan, as sales manager. Mr. Ryan is a graduate of Lehigh University in Chemical Engineering. He was formerly sales engineer with the New Jersey Zinc Co., and later as staff manager with the Johns-Manville Sales Corp.

Finishing Picture Frames

By
CARL LYMAN

General Manager of Lyman Brothers, Indianapolis, Ind., manufacturers of picture frames, explains in detail the methods employed in applying plain and fancy finishes on picture frames and how inappropriate finishes for certain pictures may be avoided

PICTURES ARE symbolic and, with the frames that surround them, they comprise one of the most conspicuous objects in the home; they can be both interesting and artistic. For this reason great care should be exercised in the choice of the size, shape and finish of the frame. An appropriate frame forms a perfect background for fine paintings and beautiful pictures.

There are two general classes of picture frames—stock frames and those made and finished for a particular picture. In the stock variety there are a number of novelty finishes as well as plain

colors, bronze, aluminum and burnished silver.

The first operation, irrespective of the finish to be applied, is to glue size the mouldings in the white. A small amount of pigment is added to the glué size which aids in filling the pores of the wood. The water in the size raises the grain of the wood, which helps in the sanding operation. Two methods are used in producing black frames; one is to spray two or three coats of black lacquer in the usual manner. The other is to rub or pad the finish on, commonly known as the French polishing method. We use the following formula to obtain the mixture of materials for this operation:

Orange shellac.....1-gal.
Linseed oil*.....1/10 to 1/3-gal.
Magnesium carbonate.....2 to 4-oz.
Dry black†.....½-lbs.
Nigrosene black.....4-oz.

* Depending on season of year.
† Soft, fine grade, fluffy black.

Sufficient alcohol is added to this mixture from time to time as the operation proceeds, to prevent pulling. I would say that about one half the volume in alcohol is added to the material in the course of a day.

Six or eight long length mouldings are laid upon a table equipped with sharp pointed pins. Using a pad saturated with the black material, the operator applies the color by passing the pad over the sanded surface. Of course, the number of "runs" or applications depend upon the grade of frame being manufactured. Taking all sizes and grades of mouldings into consideration, we apply from three to five runs. On narrow mouldings up to one inch in width an acceptable finish may be obtained with three runs.

By this method one man can finish from 3000 to 4000 lineal feet of moulding per day. We believe this is really the most economical method of applying finishes to mouldings, because the small amount of added time consumed in rubbing the finish on, in comparison to the spray method, is offset by the great saving in material.

To prepare frames for metal leaf, whiting is added to the glue size. Then the surface is sanded and pigmented shellac is brushed on (one to three coats) the color of the pigment depending upon the color of metal to be laid. After the shellac is dry a brush coat of guilders' oil is applied. This is allowed to stand overnight; then the leaf is laid on and rubbed out. Care must be taken in applying guilders' oil because if there is an excess of oil on the surface the leaf does not rub out properly.

The applied leaf is allowed to stand 24 hours and the surface is then given a thin, brush coat of shellac. Next day japan colors are rubbed in for antique crackle finish. Even plain metal-covered frames are toned with japan colors. A greenish yellow metal effect is produced by adding gamboge to the final coat of shellac, and a rich red gold color is obtained by the addition of red sanders to the shellac.

To produce burnished gold and silver frames, glue, whiting and water form the undercoats, all of which are properly sanded. Then follows a spray coat of the bronzing liquid, either in gold or silver. This coat is allowed to dry two or three hours and then the surface is burnished with an agate. A small amount of beeswax applied to the bronzed or silvered surface aids materially in the burnishing operation.

Many combination finishes are used on novelty frames and plaques. For instance the plaque

shown at the beginning of this article is a combination of black and gold, highlighted in burnished gold. The four corner ornaments, center ornaments and side drops are in burnished gold; side panels and ornament cut-outs in black and the sunken pebble effect panels in dull gold. Of course, frames and plaques of this type are not exactly production possibilities; however if the various finishes are correctly applied and the colors of the metals properly blended a beautiful effect is produced.

After all there is only one way to produce an artistic frame and that is to study the picture, then select the mat, the moulding and the finish to surround the "work of art with a thing of beauty."

Finishing Cardboard Toys

By
A. J. DANIELS

What problems were presented by the substitution of thick cardboard for wood in the making of cut-out animals to be mounted on wheels . . . and what new materials and methods were developed to finish these cheap toys satisfactorily and economically

THE DESTRUCTION of our New England chestnut forests by blight and the elimination of this fine wood from the toy manufacturers' category of cheap and available materials brought a new problem to the attention of toy finishers. With the cost of basswood and white pine virtually prohibitive, manufacturers of cheap toys felt obliged to turn to substitutes—and these substitutes have been the cause of considerable grief to finishing-room foremen.

The firm I am with formerly made an extensive line of what is called "pull" toys, that is, toys "fashioned in the flat" to represent an animal or a bird and then mounted on a wheeled platform to be pulled along by a string. When manufactured of wood, the inexpensive and efficient finishing of these toys was a simple matter. Bodies could be dipped and racked; platforms could be dipped and racked; and wheels could be dipped and tumbled. But the substitutes would permit of no such processing, therefore the frantic search and research by finishers for substitutes.

Laminated Cardboard

After a long process of experimentation we evolved a method of laminating cardboard under pressure, building up a cardboard "plank" of any thickness from ½ to 2-in. This "plank" we found could be bandsawed into desired shapes very economically. But the kerfed edge could neither be sanded smooth to take a finish, nor filled enough to eliminate the ragged appearance. The development of dies, while expensive, solved this problem to some extent; it eliminated the rough edge but it still left a job for the finisher.

When first confronted with the task of getting out samples I

quickly discovered that I was up against something new—all the way. Old sizes, old primers, old paints and varnishes were practically useless. We had to start from the beginning and build new formulas, try new materials—and to further complicate our troubles we found that we had to devise two separate processes, one for the flat surfaces, and another for the cut edges.

Finishing Flat Sides

It was obvious that the toys could not be assembled and then dipped. It was equally obvious that the most efficient procedure would be to run the "planks" or squares of laminated cardboard through coating machines—at least for the preliminary coats. What to use for a size was the question. Glue size, we found, raised the nap of the cardboard. Shellac, besides being too expensive, played hob with the composition rollers of the coating machine. Silicate of soda or water glass wouldn't do at all. Finally we had the happy idea of filling the coating machine troughs with a heavy mixture of ordinary white zinc-base primer—and that worked.

This primer neither chipped nor peeled. We found that it would hold out the subsequent coat of color in good shape, but when we sent the painted "plank" to the press room to be punched into shapes, the edges of the cut figure would show tiny cracks and flakes, no matter how sharp the die. We had thought of applying the last or varnish coat by dipping—after we had discovered some method of filling and coloring the raw edges. Now however, we found that if we primed the plank, painted it and then varnished it, we could put it through the die press without the semblance of a fracture. The varnish—a cheap varnish but little removed from polish oil—seemed to impart the necessary resiliency to the coating.

Finishing Sawed Edges

We still had the problem of finishing the raw edges. We experimented with every filler that I had ever heard of, and several that I had never heard of. Some sank in, some flaked off, and others glazed in spots.

We discovered what we might have known at the start, that no matter what we used we would have to devise some method of preventing the filler and the finish, which we hoped to apply later, from sagging over the already finished sides. The ultimate solution of both problems was this: We clamped the cut-out toys—rabbits, horses, sheep or whatever they happened to be—tightly together in blocks of a dozen. Girl operatives took the blocks and with a round brush, quickly went over the edges with a size composed of whiting, glue and color. This size we use at about the consistency of soft putty. It is so thick that it does not penetrate deeply; it dries quickly and, because of its glue content, holds fast despite its lack of penetration.

By adding a little color to the size we found we could dispense with the second or color coat by adding more color to the varnish coat. Of course the size coat is somewhat rough, but the girl operatives who apply the finish coat in exactly the same manner as they apply the size coat take care of any unsightly roughness by the application of a little sandpaper. The blocks remain clamped together from the time they receive the size coat until they receive the finish coat, and are

dried. Seldom do we have a run, and even an expert eye cannot detect any sign of "grain" on the edges of the finished toys.

Decorating

Spotting and decorating—the painting of eyes, noses and mouths—is of course done by hand. This presents no problem however, as by the time the toy is ready for these operations a sufficient coating has been built up.

The size we use for the edges cannot be used for the flat surfaces which usually measure 24x36-in. When used on such an expansive surface it raises the nap of the cardboard and causes blisters and wrinkles. Any size used on cardboard must have the quality of drying quickly, of "taking hold" and of covering. It is not a question of filling pores, as on wood, but of preventing absorption longitudinally and laterally. For this reason something approaching a paste filler must be used. While we are not positive that we found the best method of finishing cardboard we were at least successful in producing a satisfactory finish, which after all is what most of us are shooting at.

Explosion-proof Motors

Formerly concerns using motors did everything in their power to avoid the necessity of enclosing them, and in those cases where it was absolutely necessary to enclose them on account of explosion hazards, an exhaust fan was often connected to the housing to pull air through the motor, and thus carry away the heat it generated, since this was essential to prevent overheating. Probably it was this, in a large measure, that made compressed air so popular as a means of powering finishing-room equipment of different kinds.

But it is no longer necessary for the shop owner to resort to some makeshift device for keeping an electric motor both cool and explosion-proof; motor manufacturers have now taken care of this by providing motors that are totally enclosed and self-ventilating. Actual tests have proved that if an actual explosion does occur within the motor, explosive vapors around it will not be ignited.—J. E. H.

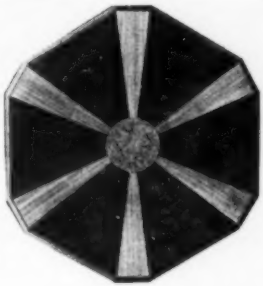
In the selection of materials for an enduring decorative finish, study the product itself—the design, size, shape, decorative effects, and the utility of the article; underlying each step is, of course, the consideration of cost.

Flat Paint Booklet

A booklet, "Formulation of Flat Paints," has just been issued by the Pigment Division of the Grasselli Chemical Co., 256 Vanderpool St., Newark, N. J. The reason for the preparation of the booklet is pointed out in the statement that "the demands of the paint trade for flat paints are as varied as they are extensive. Not only do various sections of the country prefer different types of flat paint, but the preference in any section changes from year to year. It is necessary for paint manufacturers to change and modify their products from time to time to meet these changing ideas and demands. Work of this kind may be greatly facilitated by a knowledge of the underlying principles of flat paint formulation and also by information on the effects of various ingredients such as inerts, vehicles, and thinners and combinations thereof on the properties of flat paints."

Indicative of the subject matter are the brief discussions of liquid content, solvents and thinners, pigment content, extenders, consistency, brushing, leveling, drying and set-up, color, sheen, hardness, settling, cost, and thickening agents. The booklet also includes an interesting table, which shows the effect of extenders in flat paints.

Matching Colors



By
ROBERT LEE

What primary, secondary, tertiary and complementary colors are and what colors are recommended as an adequate assortment for use in matching sample colors on various jobs—old and new

UNTIL COLORS are standardized by paint manufacturers it will be difficult to agree among ourselves just what is a jade green or a pearl gray. If one examines the color cards of several manufacturers he will probably find the same colors listed and shown on chips but under different names, and frequently colors of different shades will be listed under the same name.

Under present conditions each manufacturer selects the colors and names as seem best suited for his particular trade, so there is bound to be a considerable difference of opinion as to the correct shade of any well known color such as "lettuce green" for instance. There is considerable agitation for color standardization, but owing to the immense amount of work involved in such a task, it will probably be some time before we see a chart of colors that have become standard.

Authorities disagree as to what colors of the spectrum are primary, but we will take red, yellow and blue as our primaries and show how all colors can be made from them. They also are pure and cannot be made by the mixing of other colors. Assuming that you have pure primary colors of a known standard you could, by mixing, be able to produce secondary and tertiary colors from them.

Mixing of Primaries

Mixing blue and yellow makes green, and their overlapping makes from blue-green to yellow-green. Red and yellow make orange, and their overlapping makes red-orange to yellow-orange. Red and blue make violet, and their overlapping will make such colors as purple and indigo.

It would be well for those interested in making a color chart, to select water-soluble aniline and produce a chart showing the overlapping of primary colors.

Mixing Secondary Colors

Green mixed with orange will produce citron. If green is mixed with purple it will produce olive. Purple mixed with orange will make russett. In varying the quantity of any of the colors, the hue of tertiary color will be altered so that any shade or tint of the color range can be made.

Complementary Colors

The mixture of a secondary color with a primary, not used in its mixture, produces what are known as neutral grays and they are said to be complementary to

each other. A clear knowledge of complements allows one to either use or avoid them as desired. Example: The secondary color green (a mixture of the other two primaries, yellow and blue) is said to be complementary to red.

If colors are to be kept clear one must avoid the use of those colors which, when mixed, produce grays. Example: orange with blue, or any primary with a secondary. The mixing of tertiary colors with secondary colors also produces what are known as color grays. Examples: citron, russett, olive, etc.

Color Assortment Needed

The following colors ground in oil or japan will complete a simple assortment for matching colors in the furniture field:

Red—brilliant carmine, vermilion or crimson, and permanent.

Yellow—cadmium and chrome yellow.

Blue—Prussian blue, cobalt.

Green—verte, emerald or medium chrome green.

Brown—burnt and raw sienna, burnt and raw umber, Van Dyke brown.

Black—lampblack, drop black.

White—zinc white or flake white.

Other colors such as rose lake or carmine lake are useful.

Examples of Color Mixing

We will suppose the reader a novice in mixing and matching of colors and would want some practice before attempting to do a particular job of this kind. The following colors were made from standard tube colors in oil, mixed in the proportions as shown. Of course the colors of different manufacturers differ in strength, ard it may be necessary to vary the proportions in some instances.

If one will go through the following list and produce the colors according to the formulas given and then vary them to suit his preference, considerable experience will be gained thereby and, with additional work along the same line, this will enable one to become proficient in color mixing and color matching.

Neutral grays are made from black and white.

Dark Gray

Zinc white....(parts by wt.)	6 to 10
Lampblack	1

Light or Pearl Gray

White	16 to 20
Lampblack	1

Browns are made in many shades and mostly from umbers.

Olive Brown

Burnt umber	3
Ultramarine blue	1

Snuff Brown

Medium chrome yellow	2
Van Dyke brown	2

Cream

Zinc white	5 or more
Italian raw sienna	1

Deep Buff

White	4
Yellow ochre	2
Permanent red or vermilion	touch of

Green is very popular just now and for that reason several examples will be given.

Pea Green

White	5
Medium chrome green	1

Cats-Eye Green

White	3
Medium chrome green	1
Prussian blue	touch of

Lettuce Green

White	10
Medium chrome yellow	2
Medium chrome green	1
Blue	touch of

Grass Green

Medium chrome yellow	3
Prussian blue	1

VISION

THE Zapon Company is constantly looking ahead to prepare for the ever-changing demands of the times. For nearly half a century it has marked and adequately met each approaching change and then calmly looked beyond toward the next one. The Zapon Company even now is looking into the future toward the further development of its products to the advantage of its customers.

ZAPON

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THE ZAPON COMPANY

A Division of Atlas Powder Company

STAMFORD CONNECTICUT

Forest Green

Medium chrome green	2
Medium chrome yellow	1
Prussian blue	1
Burnt sienna	1
Lampblack	½

Dark Green

Medium chrome green	2
Burnt sienna	1
Lampblack	½

The addition of white to the lighter greens will usually produce more delicate greens of suitable shades. The addition of blue or yellow is sometimes necessary to correct a green to a desired shade.

The following colors are being used frequently, and for that reason are given in this list.

Rust

Burnt sienna	2
Permanent red	1
Venetian red	1
Medium chrome yellow	1

Burnt Orange

Venetian red	1
Medium chrome yellow	1

Orchid

White	8
Scarlet vermilion	1
Medium chrome yellow	2½
Cobalt blue	touch of

Rose

Zinc white	3
Scarlet vermilion	1

Peach*

Zinc white	8
Scarlet vermilion	1
Medium chrome yellow	1

Plum

Permanent red	1
Cobalt blue	2
White	1

Royal Blue

Ultramarine blue	2
Rose lake	1

AUTHOR'S NOTE: I will be glad to answer any questions regarding the mixing of colors. Other articles on this subject will appear from time to time.

*Small additions of white to this formula are recommended for delicate tints.

Machine Striper

Among the many different types of stripers on the market there is one type of striper which seems to be a second cousin to a glue spreader. The roll of a glue spreader runs in a small tank of glue, carrying enough liquid glue around to properly coat the surfaces being spread—and in somewhat the same way, the striper to which I am referring has a striping wheel running in liquid color. It places a neat, even stripe on the work, and it will roll single, double or triple stripes, as well as rolling them fine, medium or wide. —M. C. I.

Colors Popular for Automobiles

The August issue of "Automobile Color Index" (published monthly by the Duco Color Advisory Service) records a definite decline for black. However, it is stated that in view of the fact that this minor reaction in black's first recession in five months, it seems logical to anticipate a continuation of black's prevailing position for a somewhat indeterminate period.

Blue is still advancing, however, and looks like the logical contender for top place before the end of the year. Dark, rich Standard, one of the two new blue leaders of fashion importance to be listed this month is characterized by a slight reddish undertone. Gobelin, the other new blue leader is a median, grayish hue of blue.

Green has begun a new advance which should serve to continue this color family in third place. Except for the addition of bright, clear, yellowish Nyanza green, the constituents of the group of green color leaders remain unchanged.

Maroon still retains fourth place, its advance being hindered somewhat by the lack of worth-while variety in the range of durable maroon colors available. Cornelian maroon reappears this month for the first time since April.

Brown is continuing the decline which was terminated momentarily last month.

The gray color family has declined slightly. It is possible that dark brownish, Flint gray and greenish, Dawn gray light, the only new grays of prominence this month, will serve to revive interest in this hue.

A One Coat Finish of Unusual Beauty with PORSYNAMEL

A deep, high gloss synthetic baking enamel with unusually good color. Its toughness, elasticity and adhesion actually improve with age. Its mar-proof hardness and porcelain-like finish make it especially suitable for refrigerators and all surfaces where beauty and great durability are required.

Even white and pastel shades may be baked at 200 to 225 degrees for one hour without losing their pure, clear color. No primer is necessary except on galvanized iron. Unsurpassed flexibility, moderate cost and one-coat economy make Porsynamel best for many requirements. Ask for finishing suggestions.

Synthetic Metal Primer-Surfacer

When you need to build up a finish, this baking metal primer offers better bulk, easy sanding and low cost. Reduces four parts Primer to three parts naphtha for greatest economy.

JAMES B. DAY & CO.
CHICAGO

Enamel, Lacquer, Shellac, Stain, Etc.

Finishing exposed parts of

New Upholstered Furniture

By JACK PRATT

Foreman Finisher at the factory of Furniture City Upholstery Co., Denver, Colo.

For the final artistic effect, use a moderately dull finish with skillful highlighting to bring out the beauty of carved woodwork.

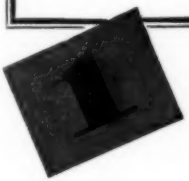
SINCE ONLY those portions of the furniture not covered by upholstery materials are finished, and because many of these consist of legs and mouldings which are attached to the frame after upholstering, production costs can be and are considerably reduced by dip-finishing these parts and placing them in stock, for use as needed.

As the parts come to the finishing department they are puttied when necessary, sanded and then stained with a standard water stain applied by brushing. When this stain has dried from 1½ to 2 hours the wood is highlighted with No. 00 steel wool and then dipped in shellac. Left on the draining screen, the dipped surfaces dry 4 hours and are rubbed again with steel wool and dipped twice in lacquer, each coat being allowed to dry 45 minutes or longer.

There are two drying screens each 3x5-ft. in the department, with 1-in. wire mesh, and sheet-metal drains beneath to catch the excess lacquer or shellac and carry it back into the proper containers. One drain screen is used entirely for shellac and the other for lacquer, a 5-gallon can of each being placed between the screens for dipping.

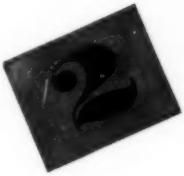
Some articles of furniture come to the finishing department with the legs and mouldings attached. In this case the procedure is as described, except that both stain and shellac are usually brushed on, but the lacquer is put on with a spray gun. This spraying is done while the article rests on a revolving stand in the spray booth, the stand being raised and lowered as desired by an air lift. An exception to this method of finishing is made in the case of

MAYBE YOU HAVE A FINISHING PROBLEM N·F·R CAN LICK!



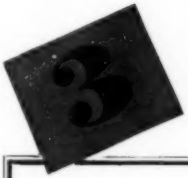
Do you have something which, on a technical or cost basis, you haven't been able to finish with lacquer?

•



Has your product always been painted, or varnished, or left in the natural wood, metal, or composition because it cost too much to give it the sales flash of smooth, brilliant color?

•

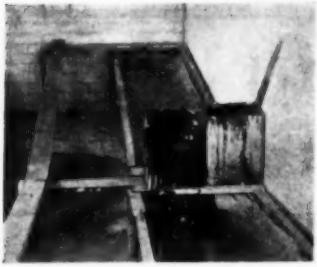


Would you like to cut corners on finishing costs if you could be shown a finish—not "just as good," but *better?*

—then you want to look into N. F. R., the NEWEST finish sensation!

WRITE direct to The Egyptian Lacquer Mfg. Co., 90 West Street, New York City — or look up "Egyptian Lacquer" in the phone book of one of the following cities:

Atlanta
Buffalo
Chicago
Cincinnati
Dallas
Boston
Kansas City
Los Angeles
Portland, Ore.
Detroit
San Francisco
Seattle
Cleveland
Philadelphia
Pittsburgh
Spokane
St. Louis



Rack, drain board and material containers for dip-finishing back legs of lounges, davenports, chairs.

the back legs of lounges, etc., which are dipped at a specially constructed rack in the rear of the booth. This saves considerable time.

This rack is 2-ft. wide and 16-ft. long, with both ends sloping toward the middle, where a can of shellac and one of lacquer is placed. The bottom is of sheet metal, and this is covered with paper, to facilitate cleaning. A strip of 1x4-in. lumber, placed several inches from the front of the rack, aids in supporting the dipped legs. The spray booth is 8-ft. 4-in. wide, by 6-ft. deep and spray fumes are quickly pulled out and discharged by a large fan in the back, the exhaust pipe extending out to the open air.

Portable Finishing

In these days of close bidding for business, scarcely any kind of a job is despised. Small odd jobs help to keep the men busy and aid in absorbing overhead, even though each one may not show an actual profit as such. For this reason, some concerns are now ready to go out on the job if necessary, to do the small job of finishing or refinishing. But it is seldom if ever convenient to take the regular shop equipment along, hence some firms have taken to using a special type of sprayer which derives its powering air from cylinders of an automobile, truck or tractor. Thus the same car which carries them to the job also furnishes them with air when they get there.—H. E. Y.

Dammar Varnish

The resins classified as "dammar" come from various foreign countries as designated by the prefix used to describe them, such as Batavia dammar, Singapore dammar, and so on. They are formed from the exudations of certain trees, and occur in lumps, drops, tears, etc. There is sufficient information on record to prove that the material comes out of the tree originally in liquid form, after which it solidifies.

There is a serious objection to true dammar varnish because of its tendency to soften under a very slight heat. However, as varnishes go, it holds the medal for whiteness.—J. M.

It is fascinating to delve into the mysteries of production in different industries and different factories in those industries. Nearly all of them have a sort of philosophy of their own which individualizes them and gives them their character.

DeVilbiss Cuts Prices

A price reduction upon the entire line of Type NC ¼-h.p. electric-motor driven portable spray-painting outfits has recently been announced by The DeVilbiss Co., Toledo, Ohio. This price reduction, which brings the cost of these NC outfits to the lowest in their history, has been made possible by their wide acceptance in the spray-painting field. Reductions range from $10 to $15, depending upon the size of the outfit.

Have You Seen
The New Walnut Color?

"SPRUANCE QUALITY"

No. 4883

TUSCANY WALNUT

WATER STAIN POWDER

A new shade of Walnut. A clear, rich, transparent Brown, the correct color and depth of shade for all latest designs in Walnut Furniture. For use on both straight-grained and butt Walnut Veneers.

SEND FOR SAMPLE

Why Not Use an Authentic and Correct Shade on Your Early American Maple Pieces?

"SPRUANCE QUALITY"

No. 4691

EARLY NEW ENGLAND MAPLE

WATER STAIN POWDER

This color is a correct match to genuine Early New England Furniture in a nationally known Museum Collection.

SEND FOR SAMPLE

THE GILBERT SPRUANCE CO.

OFFICES ◆ WORKS ◆ LABORATORIES

Richmond and Tioga Streets

Philadelphia

Kindly mention INDUSTRIAL FINISHING when writing advertisers

What a Buyer Expects of Finish Salesmen

By
E. F. WERNER

An experienced factory manager frankly reveals some intimately personal secrets—why some concerns don't get entree into his establishment, why some that are in stay in, and what the finish salesmen have to do with it

"I am going to talk about salesmen who represent companies selling finishing materials. Finishing products are, in a way, in a class by themselves."—

SALESMEN are either an asset or a liability. There is no compromise in the matter. They either accomplish a worth while purpose for the company they represent and those they sell to, or else they are wasting the time and money of their company and taking up valuable time of those to whom they sell or try to sell.

Many companies think that when they give a man a book showing the products they manufacture, and the prices these products are supposed to sell for, and then send this man out on a commission basis, that they are not out anything. But they are out! They do not realize how much this procedure costs them in goodwill and future sales. The first interview settles the matter. The buyer quickly forms a mental appraisal of the salesman's experience, knowledge and possible value. It is then just a case of telling him on all subsequent calls that nothing is desired. And the same holds true for the next man who represents this company.

In the buying of lumber, panels, metal products and the like, certain standards have been set up, many of them national in scope. With the standard grades it is simply a matter of purchasing the particular kind desired and seeing whether it can be used in the product being manufactured. Finishing materials are different. With wood lacquer quoted all the way from $1.50 per gallon to $3.25, thinners from $.95 to $1.50 per gallon, stains in just as great a difference and so on down the line, how and where are the standards going to be set. I can look at a piece of lumber and tell at once the grade it belongs to, but the same doesn't apply to finishing materials.

Take our situation, for example. We are neither extremely large nor very small. Our finishing materials' account is a worth while one, both from the standpoint of quantity purchased and payment of bills. We use a considerable quantity of lacquer and sanding sealers, a smaller quantity of shellac, varnish, drawer coaters and that type, a fair quantity of lacquer enamels, stains and the various ingredients used for tinting enamels, thinners, alcohol and the like.

The business we have in normal times is worth while for about four

WHY BUFF

your metal lacquers when you can now get

high gloss . . .

with absolute adhesion

Here, at last, is a pigmented lacquer that lays on so smooth and dries to so high a gloss that buffing is entirely unnecessary. Nor has there been any sacrifice whatsoever in the adhesive qualities.

Consider what a definite saving the elimination of buffing can make in your product schedule—*one costly operation done away with entirely!*

Murphy Adhesive Lacquers are available in *clear* as well as in pigmented. They may be used on metal, bakelite, and other moulded compounds with great tenacity, and with the assurance of a brilliant, smooth, refined, high gloss finish that makes buffing no longer necessary.

Write for further information, or a demonstration.

MURPHY VARNISH COMPANY

Newark Chicago San Francisco

Essex Varnish Company, Newark (Associate Company)
Baking Material Specialists

Murphy Adhesive Lacquers

sources of supply. If we make a business of shopping around all the time, the amount purchased from any one company will be small—and so the desirability of our account will decrease. Another thing: The companies that sell to us know they must give us value and service to hold the account and, as a rule, we get what we want.

Now, I made a check the other day and was surprised to realize that there are nearly 40 men calling on us, selling or trying to sell us our finishing materials. A few of these men are located out of town and make stops at our plant every 30 or 60 days. Some travel, making our city their headquarters and so get around oftener. There are more than 20 men who represent companies that manufacture locally or have warehouses in which all the materials required are carried on hand ready to ship on short notice.

Forty men calling and business for possibly four or five—a ratio of eight or ten to one. Eliminations are in order, and we haven't as yet reached the point where the cut of the salesman's hair or the style of his clothes is the deciding factor. We have no intention of being rude or discourteous. We have learned a great deal from finish salesmen and realize that the right kind of men can help us considerably. We are not prejudiced against the small company nor are we opposed to the large company.

The cub salesman has nothing to fear in our plant and we even overlook the times when, in his desire to make an impression, gross misstatements or exaggerated claims are made. So, laying the foundation that we are sincere in trying to be fair to these men, how are they going to get our business?

I have no intention of belittling the men who call upon us. It would be a grave injustice, because these men mean a lot to me. They have helped me solve many problems. They go out of their way to get information for me, in many instances without the prospect of an immediate order. On the other hand the "pests" are also with us. How we dread to have them come in, and I cannot begin to figure out why they keep on coming in when the only thing they get time and time again is an emphatic NO!

Most of them are not going to get any of our business. It is a physical impossibility. In nearly every instance the present source of supply is satisfactory, so that, all things being equal, all those who are in, stay in.

Most of the salesmen eliminate themselves. The things they say and do may not affect other buyers the way it does myself, but I do know that many of them react the same way because they have told me so. I am not trying to set myself up as an authority in the matter of sales or sales ethics, but there are some things I wish the salesmen would not do.

How would you react if the opening sales talk of some one not very well known to you would be, "How would a lacquer at $1.60 interest you?" or, "We have a non-blushing thinner at $.95 that is better than most of those offered you at $1.25." These remarks are typical of so many in which the opening statement in the sales talk is the price of the article being offered for sale. This is

Just a glance, *but*...

She passes a store window, and glances at your product displayed there. Will that glance become fixed? Will she stop? -- turn? -- come in?

Much depends on the way your product is finished. If it is outwardly rich, attractive, modern -- you are on your way to a sale. If it is dull, commonplace, ordinary -- she passes on, uninterested.

Hence the importance of the finish -- the value of our studio service. Here we devote expert talent to the creation of attractive new finishes, without charge or obligation to manufacturers. Our studio can produce a fitting finish for your product -- a finish that will compel more than a glance from passers-by.

Why not let us serve you?

Just send a sample for us to work on.

The

ROCKFORD VARNISH *Company*

Rockford Illinois

done before they even know what kind of product we need or have been using.

Salesmen are not hired to discuss the baseball situation or the latest scandal in the various political parties. Until they know me well enough to be beyond the preliminary stages, I wish they would not pump me to find out what I am interested in so that they can dwell on that subject and give me the impression that they are "regular fellows."

Naturally, the entire duration of a call need not be devoted to a discussion of the relative merits of the products being offered. We realize that a salesman will not get an order every time, even in those instances where they are selling us some of our material. These salesmen are our contact with the outside world and other subjects naturally will come up for discussion.

When the statement is made that the product being offered is "as good as the XZY company," all that the salesman is doing is selling his competitor's product. When they ask for a sample of the product we are using so that they can give us the "same material at a lower price," they are not getting to first base as far as we are concerned.

Then comes the plea to "patronize home industry." That is just and all things being equal the home company will get preference. We are giving as much of our business as possible to a local company so that we have a constant source of supply when specials and extras are needed. But that cannot be carried on indefinitely, and the other local manufacturers have not that means of entree.

I wish they would not insist upon presenting us with samples of their merchandise. We cannot be making tests all the time, and when something comes up that requires investigating, we will get in touch with those from whom we wish to have samples. When samples are offered promiscuously, especially when the newcomer has not asked to see what finish we use or the sheen desired then the salesman's efforts are simply wasted.

Even those who sell us some materials make mistakes. Some of them are continually trying to sell us some goods other than those we are buying from them. We admit that they should try to increase the quantity of merchandise they sell us, but there is no need of their hammering away at that time and time again, especially when they know we are thoroughly satisfied with the materials we are using.

Horse play never does look well in industry, especially in front of workmen. We do not expect straight faced, ministerial attitudes; in fact, we like all the pleasantries that go with good-fellowship, but there is a limit to everything.

We have two sources of supply for information, the trade journal and the right kind of salesmen. In fact it is firmly imbedded in my mind that the proper training of salesmen in a field such as the finishing materials line is the most important feature of the manufacturer. The properly trained man helps everybody; the poorly trained man just hinders. The wide-awake companies should devote more time to these men in times such as this, and they will reap the harvest in the times to come.

ZELLAC

Try This Policy
ON YOUR OWN BUSINESS

It's an open question whether some business men realize that their *buying policy* does not conform to their own *sales policy*.

The FINISH of your product is so essential to salability that you cannot afford to risk your sales on price-per-gallon lacquer materials. If you believe in a sales policy which claims quality and VALUE for your products, you are not applying that policy when you buy cheap lacquer grades with inferior finishing results.

Through all the ups and downs of general business conditions, the name Zeller has been associated for two generations with high-grade efficiency lacquers and lacquer enamels, made from uniform raw materials meeting strictest standards. Zeller has never offered "bargain" materials. Zellac products are consistently priced as low as possible, but only on a VALUE-per-gallon basis, i.e., grades of *definite suitability* giving the lowest finishing costs. Put these statements to the test—*try* Zellac grades in your own plant.

Attention is called to our Zellac Super Wood-Sealer, Wood Lacquers, Zelactite grades for Crystalline Finishes, Zellac Outdoor Exposure clear lacquers and lacquer enamels, and innumerable other grades for every conceivable industrial purpose.

ZELLER LACQUER MFG. CO., Inc.

20 East 49th Street New York City

CHICAGO WICHITA
LOS ANGELES SEATTLE SAN FRANCISCO

ZELLER

When I ask for information, it is generally because we do not know how to solve some problem in our plant. We are asking for help because we believe the man being questioned can help us. There certainly is no crime in the salesman or service man not knowing that particular problem, and if he doesn't know then for the love of good sense and reason I wish he would not guess at the solution. All he does is to get us into trouble and decrease our respect for him.

When we make a complaint about the goods, I do not relish the idea of being told that we are wrong and the goods are right, without an investigation. The manufacturer's representative has the privilege of coming into our plant, checking our operations, and then offering us suggestions to correct the trouble.

It is not necessary to belittle the workmen in our plant. We know that, in some respects, they are not as well posted as we are, and perhaps there are men in other plants who are better workmen, but that does not help us. We have these men doing the best they can and the only way for a finish manufacturer to help us is to help some of our workmen by raising their knowledge of various methods and procedures.

Selling is a tough game, and finishing material is one of the hardest of the selling propositions. The men who have our business got it because they had something we needed. There is no doubt in my mind at all, but that some of the other companies have products just as meritorious, but they must wait their turn.

I have the greatest respect for those men who represent worth while companies, both large and small, who conduct themselves properly and who, in spite of the fact that they are not getting any of our business, go out of their way to give us information when asked. They may have a long wait, but when the break comes they will be given the first opportunity to make good.

One will say that it is easy to point out the faults of the various men who call on us, but that is not constructive. What are the good outstanding features? What do I expect in the way of a salesman?

I believe the salesman should know the products he is trying to sell. It is not necessary to tell all the chemicals and ingredients that go to make up the product, but he should be able to bring out these points if the prospective customer sites some supposed or apparent advantage of another product.

High-pressure selling will not get anyone into our good graces; in fact rushing a material will in most instances ruin any chances it may have. Making me think I know a lot by flattery will not help me solve my problem. I know how much, or rather how little, I know and there is no offense in a man telling me that the information I have is wrong.

The finishing-materials salesman is selling an "unknown quantity," and it is necessary first to establish the firm and himself in the good graces of the buyer before he can make an entree. The well-posted, polite, even-tempered salesman, backed up by a reputable company, willing to render service, offering his product in an intelligent manner, has the edge on all the others. That is the type of men we like to have come in to see us.

ANNOUNCING

BUTYL LACTATE (NORMAL)

A UNIQUE AND VALUABLE SOLVENT

Sample On Request

COMMERCIAL SOLVENTS . . . CORPORATION

Sales Offices: New York Central Bldg., 230 Park Ave., New York, N. Y.
Terre Haute, Ind. Aldwych House, Aldwych, W. C. 2, London, England.

Bus Colors for 1932

By
HOWARD KETCHAM*

An article on color trends in busses noticed at the American Electric Railway Association convention held last month at Atlantic City. The author had the opportunity of advising in many of these color schemes, and his analysis of the trends is therefore of special value

BUS MANUFACTURERS appear to have taken a color tip from the marked consumer interest recently displayed in gayly colored automobiles which manufacturers have seen fit to release in place of the black or dark, somber hues in vogue so recently. At any rate, color schemes resplendent in the glory of full chroma in every available hue and in most cases without recourse to black even in so minute an area as required for striping purposes bid fair to make this year's electric street railway convention, scheduled to open in Atlantic City on September 26, an epoch in bus coloration. It is anticipated that the event will be the most harmoniously colorful one of its kind ever to take place.

It was not such a very long time ago that bus builders were guilty of some of the gravest misuses of color in the way they combined blatant, discordant values. Since color and design have achieved recognized distinction and worth in the automotive industry, there has been a gradual sprucing-up process in evidence all down the line. Bus builders have sensed greater consumer acceptance for their products through the inexpensive expedient of building greater eye appeal into their wares, and this in turn has built up goodwill for the bus operator.

Greater improvements in the comfort factor—the general appearance of bus interiors—have kept pace with the exteriors. Colors that add an air of restful spaciousness have been effectively developed to tie in appropriately with the exterior color arrangement, and with the upholstery materials. Tastefully selected curtains provide that needed accent touch to satisfactorily complete the ensemble.

Although light colored tops have enjoyed wide acceptance, due to their attention value, among bus operators in the past, this style of color treatment is rapidly giving way to the more modern trend of having the top, upper quarters, fenders and wheel hubs finished in the same dark shade. The dark top, of course, contributes to the illusion of lowness—and as the eye is brought down from the top to the fenders and wheel hubs in the same identical color as the roof, the effectiveness of this illusion is increased.

The lower body, hood, and trim (window reveals, etc.) are generally in a lighter color than that selected for the roof. Belt, striping and wheels are in the brightest color. The use of a horizontal ac-

* Director, Duco Color Advisory Service.

ROUND Spray OVAL Spray FLAT Spray

without changing or adjusting nozzles!

Inset photo shows the key control feature which is optional.

BINKS NEW "Thor" Model 2 Spray Gun

No longer is it necessary to have two nozzles or two guns, or even to adjust the nozzle in order to have any type of spray—from round to flat with any variation between the two extremes. The simple adjustment of a thumb nut (or removable key) on the back of the Thor Model 2, requiring less time than the setting of a watch, does the trick. This exclusive feature cuts wasted time and material practically to zero. And there are a dozen other improvements in this perfected spray gun. Investigate today. Write for descriptive literature giving complete information.

BINKS MANUFACTURING CO.

3001 Carroll Avenue, Chicago

Branch Offices and Representatives in 16 Principal Cities

Makers of Everything in Spray Finishing Equipment

cent color on the belt area adds considerably to the unit's appearance of length.

Among the outstanding bus entries at the 1931 convention the following color schemes will particularly take the eye of everyone interested in distinction and originality in hue harmony.

An observation bus with body panels in an extremely light, grayish brown value, known as Bambara brown light, in combination with upper structure, fenders and hub caps in soft gray Worth brown light, sufficiently darker than the body color to form a satisfactory contrast and appropriately accented with belt and wheels in scintillating vermilion light, makes an extremely good looking unit. The interior of this bus is finished attractively in a very light, soft, neutral gray called "sea bubble."

A double ender (bus without hood) is made to appear quite large by the use of light pastel values on the order of beige green light on the body panels with upper and fenders in a darker value called Samoan drab. The belt and wheels on this job are effectively set off by bright yellowish Lei orange.

A 33-passenger parlor car coach is resplendent in two extremely brilliant greenish hues of blue. Alluring Vancouver, the lighter of these two blue values, appears upon body panels, with Oyster Bay blue on the upper, fenders and wheel hubs. The color scheme is embellished with wire wheels and belt in ivory. The interior of this model is finished in light gray.

A small passenger coach, and one that looks extremely effective, is finished with body area in beaming, yellowish, Gigolo green, with upper, mould and wheel caps in clear, rich Theyton green. The belt and wheels are in a pale Jasmine yellow.

Still another exceedingly smart looking passenger coach is finished in yellowish Lebanon brown light upon the body panels. The upper, fenders and wheel caps are in dark, reddish Lackawanna brown and the wheels and belt in effulgent Flame Capucine. (Capucine is the French name for Nasturtium).

A private land yacht, finished all over in dark maroon with bright vermilion belt and wheels trimmed with gold, is one of the features of the show. This vehicle is called Carcajou (the French Canadian name for the Wolverine). A small sized reproduction of this active animal is painted upon the door of the car. The interior is handsomely decorated in very pale green gray.

Purpose of Acorn Nuts

The use of the acorn nuts is constantly growing among manufacturers who desire to improve the appearance of their product by hiding unsightly bolt ends. According to the manufacturer, the Acorn Nut Co., 901 Hofmann Building, Detroit, Mich., one-piece acorn nuts are now being manufactured from solid bars of steel by an improved patented process of blind tapping. This method makes possible quantity production at moderate cost.

Langdon B. Valentine Dies

Langdon B. Valentine, Vice-President and Director of Valentine & Co., New York City, died suddenly on Wednesday, August 26th. Born in 1873, Mr. Valentine would have been 58 years old in October of this year. He was the son of Henry C. Valentine, one of the founders of Valentine & Co. Mr. Valentine devoted his time to sales activities, particularly in the railway and industrial fields, in which he had a very wide acquaintance.

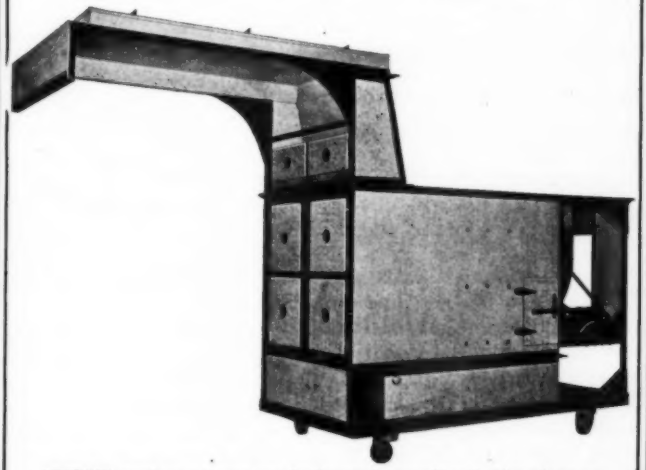
His many friends in the industry join with his associates in extending deepest sympathy to his bereaved family.

Air-Washed Paint Spray Booth

(Patented)

Portable or Stationary

Convenient - Safe - Economical



THE stationary type can be located any place in the plant as this installation, stationary or portable, requires no stack. Used air is washed and returned to room, or can be discharged outside.

Eliminates all fire and explosion hazards and meets all Underwriters requirements, all state laws and local ordinances.

Improves Ventilation — Saves Heat
Conserves Workers' Health

Grand Rapids Blow Pipe and Dust Arrester Company

Dust Collecting Systems 527 Monroe Ave. Grand Rapids, Michigan

FROM A SERVICE ENGINEER'S

"THE TRADE DOESN'T LIKE OUR FINISH . . ."

This dreaded report came to a furniture manufacturer from many quarters. Read how he met the situation

•

THE news was startling—unexpected. The refusal to accept the finish was a blow to the manufacturer's pride. It placed his business in a dangerous position.

He knew the finish was good. His associates in the business felt that the finish was right. One coat of sealer and two coats of flat lacquer—the results were all one could want. *But the trade felt differently.*

What should this manufacturer do? What could he do?

One day the du Pont representative called. The manufacturer liked him because he was more than an order-taker. The man from du Pont was a service engineer who might help to get back lost business.

The story was quickly told. The du Pont representative carefully examined some of the furniture... talked to the finishing foreman. He came back to the manufacturer.

"Joe and I have been talking this over," he said later. "We believe that if you used *one* coat of sealer, then *one* coat of clear lacquer, and *then one* coat of flat lacquer, your finish would be better."

The suggestion was followed. This finish eventually proved to be readily salable to the trade.

A du Pont Service Engineer again found a way to turn his knowledge of furniture and finishes to the profit of someone in the industry.

• • •

The days of du Pont service engineers are spent in helping manufacturers produce new finishes and correct faults in the application of old finishes. They find ways to reduce finishing costs and add to the beauty of the finish and the product.

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'S NOTEBOOK—STORY No. 8

A great deal of their work is showing furniture manufacturers how to gain more enduring beauty for their products by using a du Pont finish. There is a du Pont finish or finishing system for every type of furniture. Through rigid control of raw materials and manufacturing processes and through pretesting of every finish—du Pont can supply finishes of uniform high quality—capable of increasing the value of your products. Why not let us see if there is not a du Pont finish that, because of its speed, economy, durability and beauty, will meet your needs perfectly? This is the time to examine every possible way to make your production more efficient . . . less costly. Perhaps we can help you find that way.

* * *

E. I. DU PONT DE NEMOURS & CO., Inc., Industrial Finishes Division, Dept PB-9, Parlin, N. J., Chicago, Ill., San Francisco, Cal., Everett, Mass. Canadian Industries Limited, Paint and Varnish Division, Toronto, Ontario, Canada.

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FINISHES

"Spotting Out" Lacquer

Designing a high grade Metal Lacquer for Hardware and Lighting Fixtures requires special technique. By combining many years of experience in this field with modern chemical development and after numberless laboratory and production tests, a New and Superior M & W quality Lacquer is now offered in—

S. S. Metal Lacquer No. 49

It gives a light colored, hard, good wearing protective film with good adhesion. It withstands a weather test without discoloring the metal and prevents "spotting out" to a remarkable degree.

Your inquiry is invited.

MAAS & WALDSTEIN CO.

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2416 Enterprise Street

The border of this advertisement is a photographic reproduction of improved M & W Prismlac

Questions and Answers

This service department is conducted to meet the reader's need for prompt information on specific problems, and to give others an opportunity to review the questions and to offer any further comments or recommendations pertinent to subjects mentioned

Steel Frying Pans

I am interested in learning something about the system of finishing employed by some concern manufacturing steel frying pans. —J. D. Co.

Really, there is little to say about finishing frying pans, the system employed and equipment necessary; however, here is my suggestion:

It is understood that there should be a preservative coating placed on steel frying pans to prevent rust and discoloring while these articles are in warehouses or in the hands of the jobbers. This preservative coating may not be one that will become gummy or tacky due to varied temperatures, therefore, I suggest the following method:

When the steel frying pans are ready for their preservative coating, they should be washed in naphtha or soapy water to remove any grease that may have come from the machines used to manufacture the pans. To dry, place on steel racks equipped with hooks on which to hang the pans, by the handles. I suggest a steel rack that will hold approximately 50 articles, and equipped with casters so that the rack can easily be conveyed from one department to another. Then the pans may be either dipped or sprayed with clear lacquer and placed back on a rack to dry approximately one-half hour.

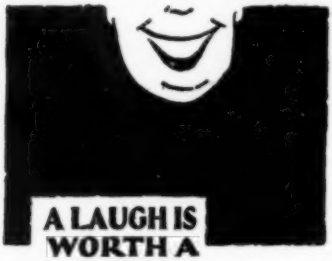
When the pans are thoroughly dry, place a caution label on the inside to the effect that, "This utensil should be dipped in boiling water two or three consecutive times before putting into use." Then the pans are ready to be wrapped for shipment. Dipping in boiling water removes the preservative coating and puts the article in condition for use.—Geo. Heidenreich.

Marble Effects on Wood

We have a customer who is interested in obtaining an imitation marble effect on kitchen cabinets to match up with some of the new stoves that are being marketed. Can you give us any information on the best way to obtain this result?—R. V. Co.

To finish wood kitchen cabinets in marble effects, as is being done on stoves, is, I admit, a difficult task for the following reasons:

The marbleizing finish you see on stoves is applied by a roller and plate—the printing method (Vance process) on a smooth, metal surface. The cost occasioned by using this method of applying a marbleized finish on wood kitchen cabinets would be almost prohibitive, since the wood



A LAUGH IS WORTH A HUNDRED GROANS IN ANY MARKET
~said Charles Lamb

THE Voice with a Smile Wins...Keep Smiling... Pack up your Troubles... surely this is the day of the peptomist and the optimist.

But who wants to laugh when blushing or something else ruins a job. And who can grin from ear to ear when a dealer returns a shipment he thinks is poorly finished. And when the consumer complains to the dealer and the dealer complains to you and you complain to the lacquer manufacturer...then what?

Then it's time to use ALAKA the practical lacquer, say we. And by way of getting acquainted send for Finishing Facts the new booklet by our service department. Or if you want samples just say so.

A laugh *is* worth a hundred groans in any market!

LACQUER & CHEMICAL CORPORATION
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Brooklyn, N. Y.
Sunset 4864:5
CHICAGO BRANCH
2539 W. Lake St., Chicago, Ill.
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surface would have to be free of imperfections, then (1) coated with two or three coats of surfacer, (2) sanded smooth, (3) given one coat of base color, (4) machine grained and (5) finished with one or two clear top coats. However, this method is used by a few manufacturers.

Another method of applying imitation marble finishes—the water dip method—would be impossible because of danger of the wood becoming water-soaked and then warping.

One other method that might be mentioned, although costly too, is the hand graining method, but of course, this system is not economical for quantity production. —J. M. V.

Vernis Martin Finish

Can you define Vernis Martin? I think that it has been defined as a finish obtained by applying varnish over dry bronze powder which has been dusted on a sized surface. Do you know if this is correct?—I. P. & V. R.

The Vernis Martin finish originated in France during the 18th century: "vernis" is French for varnish and Martin is the name of a leading coach painter who was the originator of this system of finishing. In this country the finish many years later was adapted to production methods and extensively used for metal surfaces, but is not so popular now as some 20 or 30 years ago. As a metal finish, however, it will always have use owing to the agreeable metallic luster produced and the variety of effects obtainable with it.

On small work the first coat consists of a flat primer specially

WATEROIL STAIN

Is an *absolute* water stain,—fast to light,—NON GRAIN RAISING. It produces a *clear* clean uniform Water color, prevents excess absorption of Sealers and Lacquer. DOES NOT BLEED. Covers larger area per gallon than any other type of stain.

WATEROIL RUBBING OIL

Ask any user—NO HAZE OR BLUISH BLOOM. No greasy finger marked finish. It rubs dry,—clear and clean and remains that way. Mix it with water,—it is also an exceptional Clean-up polish.

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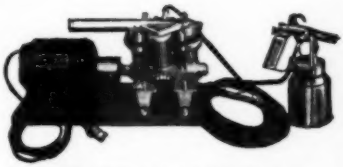
REDUCE FINISHING COSTS

with Super Spra-more "55"

Its long experience in the use of portable spray painting equipment has given Crown a wealth of valuable knowledge concerning short-cuts in product finishing. By modernizing present methods, substituting new principles of material application, and simplifying steps of operation . . . Crown has frequently effected generous savings. Often, these economies have afforded the added margin necessary to gain increased business for the product.

The facts are available to any manufacturer. Write, giving the type of product, present methods of finishing and materials used. Address the



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Price, Complete, $78.50

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made for use on metal to be sprayed, brushed or dipped on and sanded lightly when dry to assure smoothness. Over this is applied varnish to act as a size which should be made for the purpose, to air-dry or to bake. When this varnish has been applied and has flowed out smoothly, one or more bronze powders of extra fineness are blown on so as to cover the surface uniformly. The powder should embed itself into the size so as to form a smooth finish, which when dry is protected with clear, pale varnish and rubbed dull or rubbed and polished.

For large work, such as metal bedsteads, the primer is dipped on and baked at the temperature and for the time appropriate to it. The varnish size is also dipped on, whereupon the beds are removed by racks to a bronzing chamber where bronze powder is blown in through tubes to be whirled about and distributed evenly and thoroughly on the work by special fans. The size must be sticky enough to hold the powder but soft enough to permit the flakes to lie flat. Only a few minutes are required, after which the bronzed size is baked in an oven, smoothed with moss and given a second baking coat of pale clear protective varnish. Where the object does not permit the various coats to be dipped, they may be sprayed in which case the bronze powder is mixed with a varnish bronzing liquid made up so as to bake after application. —*Furniture, Finishing, Decoration and Patching* (Chap. XX)

Your choice as to whether you will or will not re-style your old product is not in your own hands. It is in the hands of the consumer or of some live competitor who is meeting the consumer's wishes.

R-150 Chemical Cartridge Respirator

Your Health Demands Pulmosan Protection!

The PULMOSAN Chemical Cartridge Respirator protects you against fumes, vapors and dust while spraying.

It cleans all air you breathe.

For better health . . . and more efficient work — adopt PULMOSAN, the respirator rated *highest by actual test.*

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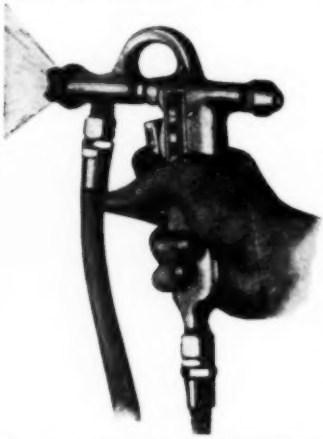
All Forged Heat-Treated ALUMINUM GUN

Internal mixture low pressure inward motion of the air holds the solvent in the spray, resulting in a nice wet coat with no spray dust, wave or stipple. Greater speed at lower pressure which practically eliminates "Fumes."



The many advantages and improvements found in the new Willard C. Beach Featherweight gun places it far in advance of its field, because of its mechanical perfection and simplicity.

Konefan adjustable nozzle enables operator to change or vary the spray from a small round cone shape spray to any desired size fan shape spray instantly while the gun is in operation. Also, fantail single hole nozzle for wide fan shape spray, ranging from a 4" spray to a 20" spray with the material perfectly distributed across the full width.

Try the new Willard C. Beach gun in your Plant on your work for 10 days. It must sell itself to you on its performance or you will not be asked to keep it.

Complete line of spray finishing equipment includes guns, pressure feed material containers, air compressors, exhaust equipment, accessories and automatic Spracoater equipment for production finishing.

Write today for complete information and descriptive literature.

WILLARD C. BEACH AIR BRUSH COMPANY
HARRISON, N. J.

Walnut and Mahogany Glaze

Kindly let us know how to mix japan walnut and japan mahogany glaze.—H. F. R. & R. S.

This is a rather difficult question to answer, not knowing just what you may have in mind nor what the glaze is to be used for—whether you intend to stipple an article to represent walnut and mahogany, or do something else. Japan colors are seldom used for glazing since they dry too fast for blending or stippling. Oil colors are better suited and mostly used for this work. Then too, japan colors are nearly double in price, and they must be handled with unusual care to prevent waste, because they dry rapidly in the open container.

Glazing mixtures are made from ready-made glazing liquid—oil, turpentine, driers and flattening oils. The ready-made glazing liquids are advantageous in that they permit more time for the finisher to do a good, clean job.

There are so many different shades of walnut and mahogany that it is really difficult to give any specific information for their mixing. However, walnut glaze can be made from burnt umber and VanDyke brown; the hue may be changed by adding raw sienna, or it can be given a reddish cast by adding burnt sienna. For mahogany sometimes rose pink or rose lake and black are used, but it may be necessary to add burnt sienna or some shade of red.

I cannot give you any definite information on how to mix either walnut or mahogany glaze without knowing just what shades are wanted. If you are using a spray gun, perhaps you can use some of the present-day lacquer shading stains which come in all colors.—J. K. Cooper.

New Materials and Equipment

Presenting briefly, certain outstanding features of new or improved materials, supplies and equipment which have been developed and made available for use in modern industrial finishing departments

Improved Electric Filters

The Alsop Engineering Corp., 39 W. 60 St. New York City, announces the addition to its line of liquid handling equipment, a new type of filter which, it is claimed, will produce, on a commercial scale, results that hitherto have been considered impossible of attainment.

Not only does this type of filter produce a crystal clear brilliant product; it produces these results on the very first drop that comes through the filter, thus eliminating the necessity of any recirculation of the liquid.

The human element does not enter into the operation of this new type of filter at all, and it has not been necessary to sacrifice filtering speed to obtain these results.

A complete range of sizes are available, from a small bench model for laboratory experimental work or very small production, up to a unit that will take care of very large production work. These filters are foolproof in operation, exceptionally easy to clean and the changing over of the filter medium can be easily done.

The filter medium consists of asbestos discs about ¼-in. thick, which are absolutely neutral in their effect on most liquids. In passing through the discs the liquid acquires the exceptional brilliancy referred to above. Every part of suspended matter is held back, so much so, that such liquids as cider, vinegar, etc., can be germ-proved. A number of different grades of discs have been developed so that practically any requirements can be met perfectly.

The exceptional performances mentioned are not merely laboratory and experimental tests, because a number of these machines have already been out and working for some considerable time, and have stood severe tests of producing absolutely efficient results in the average commercial plant.

Automatic Compressor Outfit

Quincy Compressor Co., Quincy, Ill., has brought out a new motor-driven compressor unit which is described as Model GV-80—an automatic 2-stage air-cooled unit with the motor and compressor mounted on top of an 80-gallon cylindrical tank which rests in horizontal position on metal skids. The compressor has a maximum displacement of 21½-cu. ft. per minute and is driven by multiple-V belts running in grooved pulleys.

The crankcase is totally enclosed, dust-proof, and has an automatic breather valve. The compressor is cooled by a fan type flywheel which directs a large volume of air over the entire heat-radiating area. Finned areas of the head and cylinder castings

have a large heat-radiating surface. This design and construction insures an unusually low discharge temperature and provides a cool-running compressor unit.

The outfit has automatic pressure control with a special suction valve unloading mechanism, permitting the motor to start the compressor without any load.

A New Wax Finish

Glyco Products Co., Inc., Bush Terminal Bldg. No 5, Brooklyn, N. Y., announces a new development in wax finishes which Mr. H. Bennetts of the company's laboratory tells about in the following article:

The use of wax coatings for finishes, while not novel, is still being used in a quiet way particularly on leather, rubber, linoleum, cork, paper and many composition products.

Wax is applied in any of the three following ways: (1) in a melted state, (2) dissolved in a solvent (like naphtha or turpentine), (3) emulsified in water (a milky product).

The first two methods are unpopular because of too great penetration, with resultant high cost figures and because of the inherent fire-hazard. Emulsions of wax do not possess the foregoing disadvantages. Separation and graininess of wax emulsions has been the greatest deterrent toward their wider applications.

Synthetic chemistry, supplying newer emulsifying agents, and the evolution of a proper technique from many empirical experiments have eliminated this last difficulty.

The waxes commonly used are carnauba, bees-wax, paraffin and the synthetic waxes. The emulsifying agents used are ammonium linoleate (paste) and Trihydroxyethylamine Stearate. (The latter is only necessary in paraffin wax emulsions.)

Since most finishers are not prepared to make, or do not care to make, these emulsions they can be bought from various manufacturers. They are applied by dipping, brushing or spraying. When dry they are buffed to give a very high lustrous finish. Where buffing is permitted these wax emulsions may be used on wood, glass, celluloid, cloth, mica or other materials.

The latest development in this field of wax emulsions is one which dries with a lustrous finish without buffing. It is only effective without buffing, however, on linoleum, rubber, paper, marble, cement, plaster-of-paris. This emulsion is marketed under the name of *N. R.* (Colloidal) Wax. It is a cream-colored liquid which sprays readily and surface dries in about ten minutes. It dries throughout overnight to form a hard, adhesive, lustrous film. An even higher gloss may be obtained if desired by light buffing. This coating when dry is very water-repellent. It penetrates all pores and cracks and acts as an effective seal.

This type of wax emulsion possesses other unique properties of interest to users of industrial finishes. When it is applied to felt, cloth or paper it lays the fibers and acts as a size or stiffener. It may be used to produce a transparent paper by dipping the paper in a boiling hot solution of this emulsion.

Manufacturers of plaster-of-paris and other cast products find it of value as a top coating, not only for the production of a glossy surface but to prevent powdering or chipping of corners, etc. This also illustrates its use as a binder and adhesive.

It may be mentioned in passing that many decorative motifs may be embossed on fabrics of fiberous materials coated in this way by passing between embossing plates or calenders. Colored colloidal wax emulsions are produced by dissolving an oil-soluble dye in the melted wax while the emulsion is being made. Similarly, there may be suspended therein, pigments, lakes and metallic powders for special printing and coloring problems.

Butyl Lactate for Lacquers

In announcing Butyl Lactate (a unique and valuable solvent) The Commercial Solvents Corp., Terre Haute, Ind., declares that this material makes possible the manufacture of an entirely new type of nitrocellulose coating—one which has the brushing qualities of oleoresinous finishes plus the durability, cleanability, and resistance to stains and fumes which characterize nitrocellulose lacquers.

We quote from the company's new booklet: "Butyl Lactate-

Weather-O-Meter

"Standarized Weathering Tests" have replaced guessing in our plant," says the Plant Superintendent of a Body Works to the Production Manager of a Radio Cabinet factory. And the discussion was on. It led back to where this same Body Works had lost an important contract for laundry truck bodies through the use of a new spray paint highly recommended. fine to look at, but it peeled. "Every paint used in our plant from striping gold to chassis under coat is now pre-tested in Weather-Ometer for weathering reactions. It takes little time — costs little — saves much." And the hint helped the Production Manager of the Radio Plant to the solution of a dulling out from humidity reactions on one of their high-priced lines. For practical help send for our Bulletin I. F.-10.

We are also Creators and Distributors of Fade-Ometer—Standardized Sunlight; Launder-Ometer—Standardized Machine for Laboratory Washing Tests; Wear-Ometer—Standardized Wear Test Machine.

New York—Boston—London—Berlin—Osaka

ATLAS ELECTRIC DEVICES CO., INC.

361 W. SUPERIOR ST., CHICAGO, ILL.

FOR EVERY TYPE OF INDUSTRIAL FINISHING

DURAL LACQUER

Sewall's Industrial Paints Enamels and Varnishes

SEWALL PAINT & VARNISH COMPANY

KANSAS CITY MO. DALLAS, TEXAS.

nitrocellulose finishes are practically odorless; they are less inflammable than ordinary varnishes, enamels and lacquers; they brush like oleoresinous finishes, requiring no special technique for their application; they dry hard in two or three hours; they brush practically as well on the second coat as on the first coat—there is no tendency for the second coat to lift the first coat; and they can be so formulated as to produce coatings of high hiding power and superior gloss.

"The outstanding characteristic of these new Butyl Lactate-nitrocellulose finishes is their resistance to all deteriorating influences. They resist the destructive action of cleansing agents and abrasives—they do not stain—they are immune to acid and acid fumes—sulphurous fumes do not affect them—steam and water leave them untouched. They clean easily and the cleaned surface is the equal in appearance of a newly applied coating.

"In addition to its other outstanding qualities, Butyl Lactate imparts increased gloss and adhesion to lacquer."

Pedestal Electric Fans

The Buffalo Forge Co., 490 Broadway, Buffalo, N. Y., has brought out a pedestal type of electric fan which is particularly suitable for service in industrial plants. The "Breezo" fans are made in two sizes—16 and 18-in.

diameter; their respective heights from floor to center of fan are 50 and 54-in. These heights can be changed or the fan can be removed from the stand and installed in a wall or elsewhere. Each motored fan is inclosed in a protective ring, and is screened front and back with expanded metal.

EXPERT MANUFACTURERS
OVER-AWL SYSTEM OF QUICK DRYING FINISHES FOR WOOD OR METAL
Dip Stains, Fillers, Sealers, Shading Stains, Flat and Gloss Finishing Lacquers
San-Itai-Rie Filler for All Defects In Wood
G. J. Liebich Co.
SAN-ITAI-RIE FILLER CO., Division
931 N. Ogden Ave. Chicago, Ill.

Metal Finishing Department
Cleaning-Handling Baking & Polishing

Cleaning and Coating Stove Parts

General manager of The Paul Maehler Co. (industrial oven builders) Chicago, Ill., describes and illustrates the location, operation and economy of equipment for cleaning, handling, transferring, and drying stove parts, and then dip finishing these parts and baking the finish hard

By A. E. MAEHLER

IN THE CLEVELAND plant of the American Stove Co. is a very interesting installation of equipment for cleaning and coating stove parts in one continuous operation with maximum speed and a minimum of handling. This equipment was designed and installed by our company late in 1927. It has provided highly satisfactory service and has been instrumental in materially stepping up production of the parts for which it was designed.

With this modern installation, the same amount of finished work is turned out per month with seven operators, as formerly required from 25 to 35 operators, using hand-dip methods and stationary oven equipment.

Natural gas is an essential feature of the installation, being used for drying the parts prior to coating, and for baking on the enamel or japan, as the case may be.

The equipment occupies factory space of approximately 20x175x21-ft. high. It consists of a washing compartment for cleaning and rinsing, a drying compartment, a dip tank, a 2-compartment baking oven, and two continuous conveyors which carry the work without interruption or rehandling through the various operations, and deliver the finished parts ready for assembly into completed stoves.

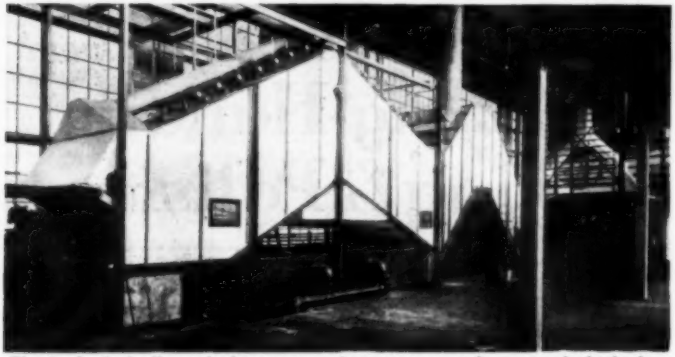


Fig. 2—At the loading end where parts are hung to conveyor by means of wire hooks.

Pieces handled are various stove parts, sides, tops, plates, and numerous small parts of miscellaneous sizes and shapes. One half section is used for continuous cleaning, drying, dipping and baking; the other half for continuous dipping and baking, with unload at same end.

The method of handling is by hooking the parts to two strand bar flight conveyors (7-ft. wide with flights on 14-in. centers) which operate at approximately 16-in. per minute, carrying the parts through the various operations. The sketch in Fig. 1 illustrates the various units with their relation and elevation to each other.

Starting at the loading platform shown in Fig. 2, the work is hung onto the conveyor by means of wire hooks. Large pieces are attached directly to the flights and small pieces are, prior to loading, hung on frames which in turn are loaded as single units. Work passes directly into the washing compartment *A* where it is subjected to a rain spray of the cleaning fluid. This is delivered under 7-lbs. pressure by a recirculating pump operated by a 10-h.p. motor. Capacity of the reservoir is 1400 gallons and the fluid, which is a solution of city water plus a small amount of cleaning compound, is heated to 120° F. with steam coils. Thorough cleaning is accomplished by pressure velocity rather than boiling water temperature.

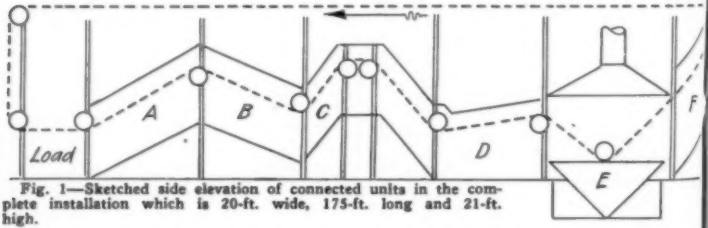


Fig. 1—Sketched side elevation of connected units in the complete installation which is 20-ft. wide, 175-ft. long and 21-ft. high.

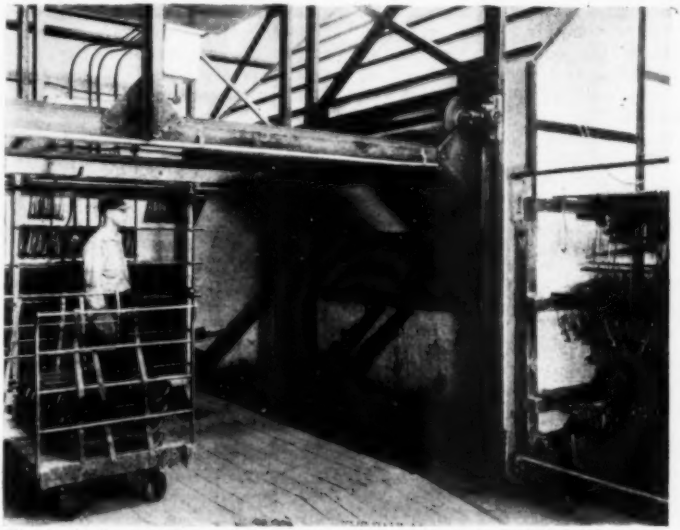
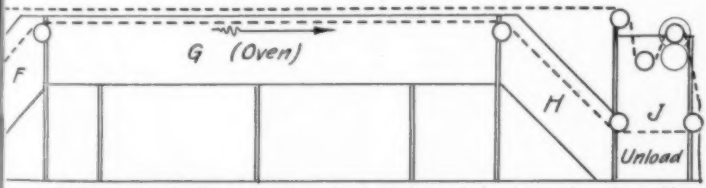


Fig. 3—At the unloading end of apparatus where parts are removed from conveyor.

The work then passes into the rinsing compartment *B* where it is sprayed with clear city water, heated to 110° F. with natural gas. An exhaust fan ventilates these compartments, carrying off steam and vapors through an opening in the roof. Large riser pipes with 2-in. cross pipes having slots 1½-in. apart, comprise the spraying equipment.

From here the work travels into the 2-pass drying compartment *C*. This is built of 3-in. insulated sectional panels and is heated with natural gas. The dryer is equipped with six high pressure efficiency burners. However, it has never been necessary to operate all six burners at one time, three being sufficient to maintain the temperature at 250° to 300° F. Consumption of gas at this standard is approximately 6-f. p. m. Moisture is removed by means of an exhaust fan



Starting at the loading end on opposite page, the marked units are for: A, washing; B, rinsing; C, drying D, cooling; E, dipping; F, dripping; G, baking; H, cooling. Heavy dotted lines indicate chain.

through a ventilator in the roof.

Approximately 30 minutes travel carries the work from the loading platform through the wash, rinse, dryer and cooling section *D* and into the dip tank *E*. The cooling section allows 25-ft. of travel in the open air, which thoroughly cools off the work before dipping. In some instances it is not necessary to clean the work, and then it is hung on to the conveyor at the cooling section, going directly into the dip tank and saving 30 minutes time.

Capacity of the dip tank is 2450 gallons. This is filled fresh every morning from storage vats of 11,000 gallons capacity, into which is returned at night the japan remaining over from the day's operations. This minimizes loss or waste through evaporation and keeps the japan in perfect condition for each day's operation. After dipping, 17½-ft. of drip travel *F* is provided before the work enters the heat.

Dipping and draining consume approximately 30 minutes. An exhauster carries off vapors from above the tank and a special system of air agitators keeps the japan thoroughly mixed at all times. Complete fire protection is secured by an automatic installation under the drain boards. In case of fire, the surface of the japan is instantly smothered with extinguishing fluid and the valves are opened, returning the japan to the storage vats.

The oven *G* is built in two compartments which flank each other and operate independently as separate units. Each compartment is 9½-ft. in width, 21-ft. high, and approximately 80-ft. long. The left hand compartment is operated in conjunction with the equipment described above. The right hand compartment is used as a separate unit for baking hand-dipped and sprayed parts of special nature.

There are no washing and drying sections connected with the right hand unit, so we will confine our word picture to the left

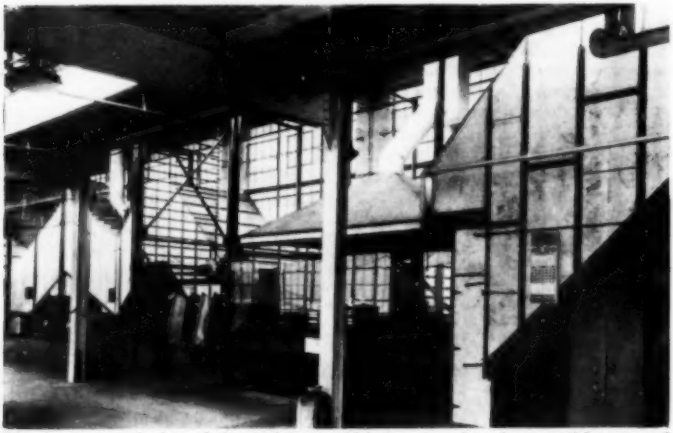
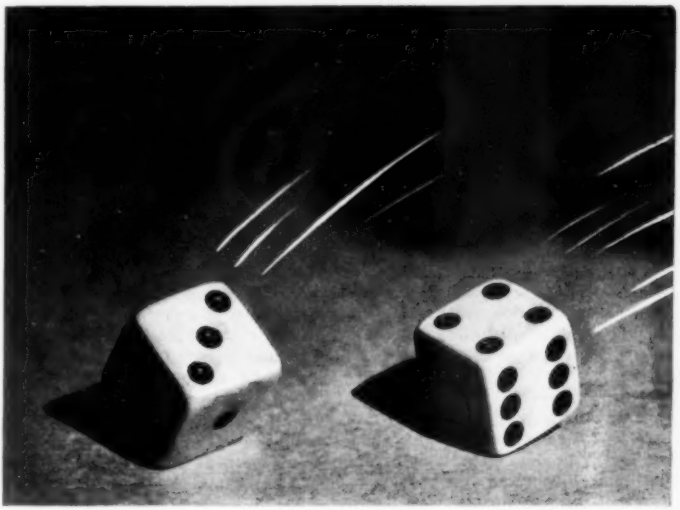


Fig. 4—A general view of the equipment which has proved to be so satisfactory and economical.

WITH THE RIGHT FINISH, YOU'LL FINISH RIGHT



As Sure as the Turn of Loaded Dice

The man who rolls loaded dice knows in advance that the turn will bring a winning combination. When you use Lilly Finishes, you have that same assurance of absolutely dependable performance, with a quality formula, developed to meet particular requirements, and manufactured to rigid standards to guarantee uniformity and satisfaction. You'll be "lucky"—always—with Lilly Finishes.

Lilly Enamels, Lacquers, Fillers, Stains and Varnishes assure the quality that successful manufacturing demands. Write us, at either office, about your present or future requirements.

LILLY

LILLY VARNISH COMPANY

666 S. California St. Indianapolis, Ind.

273 N. California Ave. Chicago, Ill.

Kindly mention INDUSTRIAL FINISHING when writing advertisers

hand unit. This oven is a straight-pass type, equipped with indirect radiators and with nine natural gas burners. The radiators are interesting as they employ a special principle of horizontal tube and baffle-plate combination designed to utilize every possible unit of heat energy. This type of construction permits regulating the flow of gases in volume and velocity through the radiators, permits fixing a definite ratio of escape from the radiator vents to the atmosphere, and thus reduces wastage to the minimum. Oven construction, utilizing 4-in. insulated panels, further prevents heat loss and leakage into the atmosphere.

Natural gas is pumped to the burners by a gas pump, and when in full operation, about 12-f. p. m. of gas is consumed. Burners are automatically controlled by two control units operated by a separate motor mounted on the oven. Each burner is lighted separately at the start of a day's operations, and thereafter the flow of gas is thermostatically controlled. Temperature is maintained at approximately 480° F. and may be regulated to a very slight fluctuation in degrees. Safety devices automatically cut off flow of fuel in case of power failure, or failure of any working part to properly function.

Ventilation and exhausting of vapors is accomplished by exhaust fans through vents in the roof which are set to meet the operating conditions. Relief covers in the roof are an added safety precaution and protection against explosion hazard. Construction of the oven throughout is in accordance with the Underwriters recommendations, the entire installation being equipped with special safety devices as protection against damage by fire or explosion. In case of failure of any kind, everything stops automatically, fuel is shut off, and resumption of operation must be manually accomplished. Signal lights inform the attendant at a glance the exact operating status of the various pieces of equipment at all times.

Approximately 60-ft. of travel and 55 minutes in the heat bake the japan to a hard, smooth, uniform finish. One coat work only has been the standard performed in this oven, and it is said that during the several years operation, there has not been a single case of stripping or a single rejection, due to imperfect finish. The total time consumed in dipping, draining and baking is approximately 1½ hours.

The work passes from the heat into the cooling compartment *H* and thence onto the unloading platform *J*. An air seal at the unloading end prevents heat loss from the oven so effectively, that except on extremely hot days in summer, the operators unloading the work experience no discomfort from heat. A fan exhausts the heat from the cooling chamber and recirculates it into the oven. The work is entirely cooled by the time it is removed by the operators and placed on a con-

Pioneer Builders Of Air Heaters
NICHOLS PRODUCTS CORPORATION
12953 Greeley Ave., Detroit
122 East 42nd Street New York
DIVISION OF ROSS INDUSTRIES, CORP.

1,000,000 gallons of enamel for new Refrigerators . . . use REZYLS and add durability to the finish . .

More than 1 million new refrigerators are being built this year—big ones for commercial use as well as smaller ones for domestic use. Here's a market that is made to order for improved enamels and lacquers formulated with Rezyls.

The user of Rezyls has great sales-closing arguments in the unique advantages of Rezyl-type finishes. He can stress their exceptional durability . . . their beautiful depth of finish . . . their unusual gloss . . . their whiteness. Additional toughness, elasticity and adhesion are assured with Rezyl-type finishes because of their varnish-like nature.

Both air drying and baking enamels are readily prepared from Rezyl 1102. Let us tell you about Rezyl 1102 for refrigerator and other enamels; also Rezyls 19 and 53 for white lacquers.

Industrial Chemicals Division

American Cyanamid Company

535 Fifth Avenue New York

American Cyanamid Company, 535 Fifth Avenue, New York
Send the booklet, "Rezyls" and other information on
☐ Air Drying Finishes ☐ Baking Enamels ☐ Lacquers—For use on:
☐ Furniture ☐ Textile ☐ Clear ☐ Wood
☐ Industrial ☐ Automotive ☐ Pigmented ☐ Metal

Name _____

Address _____

For attention of _____

veyance for transfer to the assembly department.

The drive is a 2-h.p. motor operating a series of spur gear reduction units. Two strands of steel roller chain, supporting the flights, and operating on sprockets throughout the system, comprise the conveyor equipment. Roller bearings are used at important bearing points, and a semi-automatic system provides lubrication. Structural steel supports the entire installation.

It is interesting to learn that with this modern installation, the same amount of finished work is turned out per month with seven operators, as formerly required from 25 to 35 operators, using hand-dip methods and stationary oven equipment. Another comparison shows that five men operating the present oven accomplish, in two days, work which formerly required eleven men to turn out in six days. The attendant savings realized will be readily appreciated.

Available figures for an operating year show an approximate consumption of 2870-cu. ft. of natural gas per ton of finished work—all sizes and shapes—or, reduced to dollars and cents, at the prevailing rate gas consumption per ton cost $1.88. No expenditure for repair or maintenance, exclusive of lubrication, has ever been made, although it has been in operation for over three full years.

Richelieu Pearl Essence

For Color Beauty
That Endures Monotony

JOS. H. MEYER BROS.
220-25th St. Brooklyn, N. Y.

Midwest Representative
M. L. Freud, Wolverine Hotel
Detroit, Mich.

A designer declares that, "Many products have been brought to my attention for redesigning and in many cases the design has been good, but the colors used were badly balanced; too little attention is paid frequently to color areas and color chromas, that is, the strength of the color, which is an important factor which needs careful consideration.

Today consumers are more interested in products that are designed and made to fit into their own scheme of things, than in those products which come from the largest factory in the world. Yet many manufacturers are so close to their own business that they can not see this fact.

Industrial Alcohol Permits

Procedure relating to permit control of industrial alcohol and other nonbeverage liquors is outlined in a publication issued last month by James M. Doran, Commissioner of Industrial Alcohol in the Treasury Department.

Information is furnished for the guidance of more than 177,000 individuals, firms and corporations using industrial alcohol whose business operations are under Government supervision. Varied phases of permissive control are described, for the benefit both of permittees and the general public.

L. J. Belnap Made Chairman of Worthington Executive Committee

The Board of Directors of Worthington Pump and Machinery Corp., Harrison, N. J., has announced the election of LaMonte J. Belnap as chairman of the executive committee of that corporation. Mr. Belnap is succeeded as president by Harry C. Beaver, formerly vice president.

LITTLE TRICKS OF THE TRADE

Lac remarked: "I watched a fellow do a lot of clever things the other day. But, after all, they were just some 'slick' tricks. Made me think of some things about lacquers."

There are no short cuts or sleight-of-hand to making lacquers that will produce lasting finishes. Good lacquers require good raw materials properly formulated. Manufacturers and users of lacquers who specify

PENTASOL AND PENT-ACETATE

are *never* fooling anybody as to the high quality of their products, and PENTASOL and PENT-ACETATE when properly formulated always produce a finish that is brilliant, durable and lasting.

SHARPLES TRADE MARK SOLVENTS

The SHARPLES SOLVENTS *Corp.*
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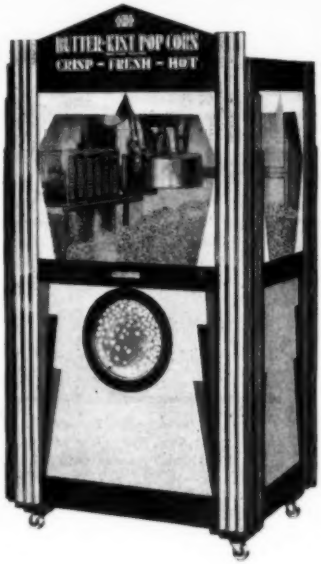
501A FIFTH AVENUE, NEW YORK CITY

How We Finish Vending Machines



By G. H. ROSSEBO

Factory Manager of Holcomb & Hoke, Indianapolis, Ind., manufacturers of vending machines, refrigerator cases and other equipment describes in detail how popcorn machines are finished and decorated

MAN HAS reduced living to a science. The modern demand for rapid individual service is being met by self service in dispensing food and confections. Research has produced the vending machine in answer to this demand.

Not only have the mechanical principles of the vending machine been improved, but its appearance has been enhanced according to modern merchandising requirements. For example, let us consider the popcorn machine illustrated above. The skeleton frame is wood with chromium-plated column covers extending the full height of the machine in the front.

The upper section of the machine consists of three glass panels; the lower section has four metal panels, the front panel containing a round glass window.

All of the metal panels are finished in aluminum with red and black decorations. The metal sign has white letters on a black background. The wood frame is finished in black with the exposed edges in red.

On entering the finishing room, skeleton frames are given a spray coat of pyroxylin primer. This coat is allowed to dry from four to five hours; then the surface is sanded lightly with No. 5/0 sandpaper. Next the exposed edges of the wood frame are given a spray coat of red lacquer. We use a shading gun for this work, and apply a double coat of red lacquer. The edges are allowed to dry about four hours; then the face of the wood frame receives a spray coat of black lacquer. A metal shield is used to mask the finished edges

A New BRASS LACQUER R-1809

R-1809 is an exceptionally light colored brass lacquer, especially adaptable for spray or dip applications on brass articles which will be exposed to the weather.

R-1809 gives a permanently flexible and adhesive film, possessing remarkable resistance to tarnish on exposure. For spray application R-1809 is used with an equal volume of thinner.

Write direct to us—

MERRIMAC CHEMICAL CO., *Inc.*

Boston, Mass.

Works: EVERETT, MASS.

Offices: Everett Station, Boston .... Empire State Bldg. New York

A Division of

Monsanto Chemical Works

MC

while applying the black face coat. Wood frames dry overnight and are then delivered to the assembly room.

Metal panels are washed with gasoline in the fabricating department and upon arrival in the finishing room, they are again washed thoroughly with lacquer reducer. This double washing produces that clean surface so necessary to satisfactory finishing. Our first finishing operation on metal panels is a spray coat of pyroxylin primer which is allowed to dry from six to eight hours. Then follows a double spray coat of aluminum, applied to both the inside surface and the outside surface of these panels. After drying about an hour the panels are taken to the decorating room where the red portion of the modernistic design is applied by the silk-screen process. After drying five hours, panels are again placed under the silk-screen stencils for the application of the black color around the circular opening and the black portion of the design.

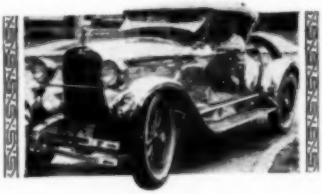
Three silk-screen stencils are used to apply the decorations—one for the black circle and two half-V stripes on the front panel, another stencil for the black half-V stripes on the side panels, and the third stencil for the four red half-V stripes on all panels. The silk-screen process makes for absolute uniformity in the decoration of panels and produces the designs in clear, brilliant colors with clean-cut lines.

We do not make the sign panels, but purchase them already painted and fired.

I have found that it is not the number of finish coats applied that makes for satisfactory finishing; the secret of good work depends upon the condition of the surface to be finished, upon the smoothness of this surface and its freedom from oil, grease and dust—in other words, absolute cleanliness—and lastly upon the kind and quality of the finishing materials. Too much emphasis cannot be placed on the selection of materials. It is only through thoughtful study and intelligent experimentation that the manufacturer can safely reduce the finishing schedule and still maintain the quality and appearance of his product.

Finishing Advertised by Plated Service Car

I have changed my sport model service car into a display ad of the work I turn out—or perhaps I should speak of it as a great, big sample of plating. I figure the advertising value of the



transformed car is worth the cost; just using part of my advertising appropriation that way. The firm name and address is printed in rather small gold letters on the door. Inconspicuous? Yes, but if that lettering were big, they'd just read it and forget it, but since it is hard to read they notice the silver car first time and probably miss the name altogether. Next time they see the car they will look again, maybe stop, or ask somebody about it.

By the time they find out they

JONFLEX

Precision-Edged Masking Tape

LEAVES a well-defined, clean-cut edge. Easily applied and removed. No crinkling or buckling in application, and no fuzz or ravel left when removed. Lacquer and solvent proof, it is the unanimous choice of all expert craftsmen.

•

Send for free sample roll and be convinced of its perfection

•

JOHNSON & JOHNSON
New Brunswick, N. J.

will have my name and my business fixed in their minds. Then when they want a radiator shell nickeled, or an antique cleaned up or bronzed, they will recall my nickel-plated car and how bright and shiny it looked, and then come here to get their work done; at least I hope they will, and I know it works that way sometimes, for I have customers who say they were attracted by seeing my nickeled car.

And why not use a sample of my work to speak for itself? People are mostly Missourians around here so I just show 'em!

Of course it was a pretty big job plating and fixing up that car. I first removed the original finish and ground it down to a glass-like surface, beginning with coarse emery and changing gradually to finer grades. Then I put it through the cleaning process and plated it with copper to prevent any rust from forming and marring the metallic finish to follow. The copper plating was put on with electricity and chemicals, buffed to a bright finish, and then the cleaning process was repeated. Then it was given a nickel plating, buffed and cleaned again and trimmed in chromium and polished.

I do a lot of antique work, both refinishing and antiquing newer things. I am asked to refinish almost any kind of material—pewter and old silver and bronzes and brass. Some of these old things, especially the brass and the pewter only need cleaning and buffing to bring back their original beauty.

Sometimes my customers want a little engraving done. I do that free hand right on the metal without any pattern or drawing. One has to be something of an artist as well as a mechanic and chemist in this antique repair work.

My car helps me discover customers. They see that big sample of plating going around, and hunt me up. It's the best ad I could have, I believe.—Martin Scott, (Scott's Chromium & Nickel Plating Works, Kansas City, Mo.).

Commercial Alcohols

It may surprise many readers to know that the alcohol family is a very large one, each member of which has its individual properties, boiling point and specific gravity.

Alcohols are colorless and insofar as chemical reaction is concerned they are neither acid nor alkali. They range all the way from types that are liquid to those which are solid. The liquid type alcohols have a burning taste and a distinctive odor; in general they are soluble in water. The more important kinds are methyl, ethyl, propyl, butyl and amyl.

Methyl is wood alcohol one use for which is to make grain alcohol unpalatable and poisonous so it is unfit for drinking. This particular grade of alcohol is now being produced synthetically from carbon monoxide and hydrogen. Indeed this new discovery has changed the order of things so that the manufacture of wood alcohol by distillation has declined very materially, due to the fact that the synthetic form is sold at a much lower price.

Ethyl alcohol still holds first place in the number of gallons produced in the U. S. It is the kind used in intoxicating liquors, and that which is furnished when one asks for "pure grain alcohol," although one may not be sure the

STOP *the inroads of corrosion and rust with a primer coat of*

SOLFO NO. 5 RUST PROOF METAL PRIMER

It contains special anti-rust ingredients that make it superior to any other primer. It has unusual adhesive qualities, great elasticity, and leaves a smooth surface.

SOLFO METALLIC COATING

makes paint stick to galvanized metal. It is a metallic liquid, which when applied forms an alloyed coating, and absolutely prevents peeling and chipping.

BUY FROM THESE JOBBERS

N. FLANTZ & SON, New York, N. Y.
BERT L. DAILY, Dayton, Ohio
A. & B. SMITH CO., Pittsburgh, Pa.
POLLAK PAINT CO., Buffalo, N. Y.
C. SCHRACK & CO., Philadelphia, Pa.
KING-BOWMAN STEEL CO., Tampa, Florida
THE REMAC CO., Boston, Mass.
BECKER SIGN SUPPLY CO., Baltimore, Md.
WALTER MORGAN CO., INC., Washington, D. C.

SOLFO CHEMICAL CO.
TRENTON, N. J.

Armitage ARMOREAC LACQUERS VARNISHES ENAMELS

ARMORCOID

Trade Name

Synthetic Enamels

(Baking or Air Drying)

The paint manufacturer's closest approach to a porcelain finish in enamel.
Has unusual adhesion — hardness of baked finish — high gloss or dull — quick bake. High solids give exceptional build and toughness without brittleness.
Available in one coat white, black and solid colors for metal furniture, refrigerators, etc. Technical advice gladly furnished.

It stands the test!

John L. Armitage & Co.
Established 1876
NEWARK, N. J. and DETROIT, MICH.

SIX POINT WHITE

A product chemically engineered to give a long-awaited finish for refrigerator boxes, vending machines, hospital equipment or anywhere that a uniquely superior Lacquer Finish is desired.

Point 1. Tenacious Adhesion.

Point 2. Minimum Discoloration.

Point 3. High opacity combined with smooth flow and lustrous sheen.

Point 4. Unbelievable resistance to chipping, scratching, printing and other mechanical abuse.

Point 5. Marvellous resistance to water, oil, sulphur dioxide gas, and actinic rays.

Point 6. Write us for this and further information on our "SIX POINT" White System.

The Varnish Products Co.
Cleveland, Ohio

N. B. "6-Point White" can be tinted to a wide range of desirable pastel colors.

particular alcohol he buys was made from grain or from molasses. However, the chemical formula is the same, so there is no harm done.

During the World War butyl alcohol, which is made by a fermentation process from corn, was started upon the initial stages of its great commercial development, as is now indicated by the production figures for 1921 and 1929, respectively. In 1921 2,000,000-lbs. were produced, while in 1929 67,500,000-lbs. were produced. In fact this particular alcohol was the basic cause of the rise to prominence of automobile lacquer. We could almost say it contributed more than any other chemical factor to the rise of lacquer in the automotive industry. Butyl alcohol like methyl alcohol is deadly poison.

The alcohols mentioned here are those in which the public is principally interested. In addition there are other so-called higher alcohols—hexyl, heptyl, octyl, cetyl, etc. The latter is solid being a wax-like substance found in the head of the sperm whale. From the foregoing it will be seen the term alcohol has a very wide meaning, hence it is paramount when ordering alcohol to mention specifically just the kind desired. —J. M. W.

Comparative Testing

When deciding upon a certain manufacturer's paint, varnish, lacquer or undercoat as a standard for production, after testing out various makes of materials, it would be well to be sure how the final decision was arrived at.

In my experience, going from factory to factory, I have come to the conclusion that much so-

called comparative testing is not comparative at all.

One salesman will submit a sample of lacquer today. The finisher sprays the material on a panel and after it becomes dry he has it rubbed out, requesting the sprayer to determine the spraying quality, and the rubber the rubbing qualities. The panel is then preserved.

A little later another salesman brings in a sample of lacquer. This lacquer is used in the same manner as the first sample, and the panel is placed with the first panel. Perhaps several other lacquer manufacturers send in samples and all of the finished panels are put side by side and compared.

Now this may appear to some to be a comparative test but it really is not. Unless samples are tested on an identical basis there is no use in trying to make any comparisons at all.

There is only one way to find out exactly how one lacquer or paint will measure up to another, and that is to get several samples of material together with definite instructions for their particular use from the manufacturers, such as the amount of thinning required, etc.

The next step is to give each sample to one spray operator, together with an equal number of panels which have all been stained, filled and made up in exactly the same manner at the same exact time. The operator then takes each sample of lacquer and finishes a panel in the same way, applying exactly the same amount of material on each panel, under identical atmospheric conditions. Naturally a cup gun must be used for this work.

These panels after having been coated with the various lacquers are placed in the same place to

GIVE this flexibly-finished rubber ball a squeeze. We'll gladly send you one for the purpose. When you are through with your examination of the life and play of the flexible lacquer film, take the ball home. Give it to the kid. Notice the added pleasure the child gets from it because it is a decorated ball. That is the eye-catching lure of a finish, perfectly demonstrated.

Surely this remarkable flexibility which our materials possess should open your mind to possible uses for it. These uses may be in connection with some of the design modifications and improvements with which you are now concerned. We'd like to have you consider our materials. They have qualities which merit your inquiry.

On request, we shall gladly send a color card showing our 16 standard shades and their respective tints. These flexible materials are also available as clear lacquers. We'll send along a series of Research Bulletins giving interesting finishing data that belong in your files. Oh, yes . . . . tell us if you'd like to have one of these rubber balls, which were flexibly finished by dipping.

Roxalin Flexible Lacquer Co., Inc.
35-40 Thirty-Sixth Street Long Island City, N.Y.

The New

RUBLESS POLISH

N. R. (Plastic) Wax Liquid

It dries in about twenty minutes to a high lustre requiring no polishing or rubbing.
The lustre is more durable and the finish is harder than that usually obtained with other polishes of this type.

N. R. (Plastic) Wax Polish is:

1. Free from solvents, non-inflammable and odorless.
2. Free from scum and will not separate.
3. Penetrating and will fill cracks and pores.
4. Excellent for waterproofing.
5. Applied easily by mop, brush or spray.
6. Lustrous and durable and impervious to water.

Price Schedule (F. O. B. New York)

440 lb. drums 14c lb. 40 lb. cans 19c lb. 8 lb. cans (1 gal). 24c lb.

A gallon trial can will be sent upon request for $1.80.

GLYCO PRODUCTS CO., Inc.
33-35th Street Brooklyn, N. Y.

Hy-Speed

EXPLOSION-PROOF ELECTRIC MIXERS

Clamp to *any* tank and mix *all* liquids

MIX QUICKER

LAST LONGER

COST LESS

Note Patented "Push Pull" Propeller Action

ALSOP

ENGINEERING CO.
39 West 60th St. New York

dry and after dry they are given to a rubber who is told to carefully check up on the ease with which each panel rubs out. It is understood of course that each spray-finished panel, as well as each can of lacquer, is properly labeled or marked so that no mix-up can occur.

If a weathering test is desired the panels can be placed on the roof in the same position along side of each other.

Then, after a few days or weeks, the panels can be examined with the assurance that all have been given equal treatment and that the tests have been conducted on as nearly an identical basis as is possible to do in the average finishing room.

The point I wish to emphasize is that there is too much rough testing done in which the results are arrived at by guess work more than any other way, and this is not only unfair to the concern that submits samples, but to the finisher himself—who has deceived himself.

It is true that much of this occurs because the finisher does not really realize that little things often will make a great difference in the tabulated results.

Perhaps suggestions along these lines from finishers who make a practice of comparative testing would make good reading matter for the trade at this time.—J. C. Hertstein, Jr.

Color Decorative Display

The matter of presenting solutions of painting problems to customers in easily comprehensible form is being given more and more consideration, as is shown by the increasing number of built-up exhibits being constructed in

modern paint shops. Of these, one of outstanding merit was built recently in the store of the C. S. Wetherill Estate in Burlington, N. J. A section of an exterior of a house was erected in the rear of the store and an attractive color scheme chosen as appropriate for the style of architecture used was developed by a nationally known home decoration service.

The walls, or body of the house, were painted with old ivory prepared paint, and the roof was of a composition roof material combining several shades of green. The window sashes and frames, as well as the door frames and the front door, were painted with cream prepared paint, while the batten shutters and the screen door were of trim and trellis jade green.

An interesting departure from the usual formula in house decoration was introduced by painting the mouldings or headings at the top of the window frames and door frames with jade green, while the front part of the window sills was also painted in the same color.

Dawn-colored Tontine shades were used at the windows, with dainty dotted Swiss curtains, ruffled and tied back.

The display is not only an attractive part of the store, but it also creates much thought and discussion on the part of customers and prospective customers. —DuPont Bulletin.

Through advertising and its attending study of market needs we have learned a lot about the things which consumers think about products. Many a product which formerly seemed adequate has become as obsolete as a buggy.

Reduced From 10"x14" Clear Crystal Lacquer Panel

Our Latest Development

Crystal
LACQUER

Which Produces a Large Cube Design on Wood or Metal Surfaces

Write for Sample Panel and Method of Application

HENRY V. WALKER CO.
Elizabeth New Jersey

Industrial Finishing
MAGAZINE

Issued fifteenth of each month. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

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Subscription rates, $2.00 per year in U. S. and possessions; $3.00 per year in Canada and other foreign countries.

Advertising rates on application.

EDITORIAL

New Radio Finishes

At the radio and electric refrigerator show held this fall in Indianapolis, those in attendance had the rare opportunity of viewing the different models of all leading manufacturers under one roof. It was an ideal chance to make comparisons as to the appearance of cabinets, both in design and finish.

The electric refrigerator cabinets were all snow white—apparently in metal with a porcelain enamel finish. There will undoubtedly be some change from this all-whiteness within the next year or so—just as there was a change from all-whiteness in bath rooms and kitchens.

Radio cabinets were practically all in genuine walnut finished natural, or in other cabinet woods finished in color or walnut. There was not a painted cabinet in the lot nor did I see one in mahogany or oak, although the circulars listed some models in brown mahogany. In a few cabinets some other wood was used sparingly for a small ornamental effect; here one found oriental wood, "quilted" maple, boxwood inlay, etc.

In design the cabinets have shown a welcome improvement; for the greater part they are well-porportioned and have pleasing, restful lines which means that they aren't overloaded with burdensome and boresome ornamentation. Freakish designs and cheap, gaudy ornamentation were hard to find.

Several manufacturers are showing Grandfather clock models which may or may not prove to be popular. The one cabinet that represents a radical departure is "Columaire," which, as its name implies, reminds one of an ornamental column. It is a space saver as it occupies less than 1-sq. ft. of floor space and stands almost as high as a man. There are some interesting possibilities in this cabinet.

Skillful highlighting is in evidence in the majority of the cabinets, and those that show up particularly well are in dark walnut with only a medium lustrous sheen produced by oil rubbing. Both the heavy-bodied, high-luster finish and the skimpy-bodied, excessively dull finishes seem to be less desirable alongside the sensible moderate luster of a well lacquered, hand-rubbed finish.

Precision Production Planned

In high speed mass production, individual small parts must reach the assembly line in perfect condition and at a uniform speed or the entire plan of production will

fail. "Fit and try" methods of assembly cannot be employed. Parts must be inspected and tested at the earlier stages and imperfect materials rejected before the final assembly. Neglect of detail is ruinous. Under any system which permits neglect, production schedules fail and costs mount to prohibitive levels.

The majority of manufacturers today find their products in a highly competitive market. Price levels, already established, must be met. The profit margin does not permit fluctuation in manufacturing costs. Strict maintenance of a production schedule and low operating costs are essential. Failure of any detail of the production plan means a loss of profit.

Toilet Seat Finish Standards

The Bureau of Standards of the U. S. Department of Commerce has just released copies of the booklet containing Commercial Standard CS29-31 referring to "Staple Seats for Water-Closet Bowls" wherein among other things the requirements of the three standard finishes for hardwood seats are set forth—namely, varnished seats, sprayed-finish seats (white or colored) and sheet covered seats.

Variable-Speed Drives

Variable-speed drives have become very essential in most of our modern shops, particularly in those where management is striving to beat competition on product and price.

It is no longer the simple problem of throwing a switch and turning out the same old product year after year. Today we must be the first to take advantage of changes in public taste. To do this we have to revise our product almost over night—new styles, new shapes and new finishes.

These new conditions call loudly and clearly for variable-speed drives if we are to get the utmost from our shops and factories. Painting and finishing conveyors can not be run at the same speed for all finishes. One finish can be hurried, another must be slowed down for the best result. On inspection and assembly we can increase production noticeably by adjusting the operating speed to suit conditions. If we operate too slow we are wasting time. On the other hand, if we operate too fast we have slighted work and expensive rejections.

Automobile manufacturers with their processes timed to split seconds were among the first to adopt variable-speed drives in a serious way, and the most spectacular application has been the continuous assembly conveyor for finishing bodies and assembling cars. These layouts are efficient to the nth degree, yet they can be quickly and economically changed to suit new styles.

A large tractor manufacturer is using a variable speed drive for feeding wheels and smaller parts through dipping, draining and baking ovens. The drive is reported to be a real success and it can be adjusted to exactly the right speed no matter how large or small the parts handled are.

There are several types of variable-speed drives available. Where a few definite speeds are all that will ever be necessary, the step-cone pulley and the selective-speed transmission fill the bill nicely. Where considerable flexibility is desired there are several compact and very efficient variable speed transmissions to choose from.

There was an average attendance throughout 1930 at the American Furniture Mart (Chicago) each month of 1,216 buyers representing 994 firms. This is exclusive of the January and July market periods. Attendance before and after the June market this year has been running slightly higher than the 1930 average.

Classified Advertising

Advertisements under this heading 45 cents a line per insertion, minimum charge, $1.35. In estimating, calculate six words to one line, and add one additional line for heading. Use this department to obtain help, find positions, buy and sell equipment, dispose of manufacturing properties, etc.

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